THE RUBBER AGE AND TIRE NEWS

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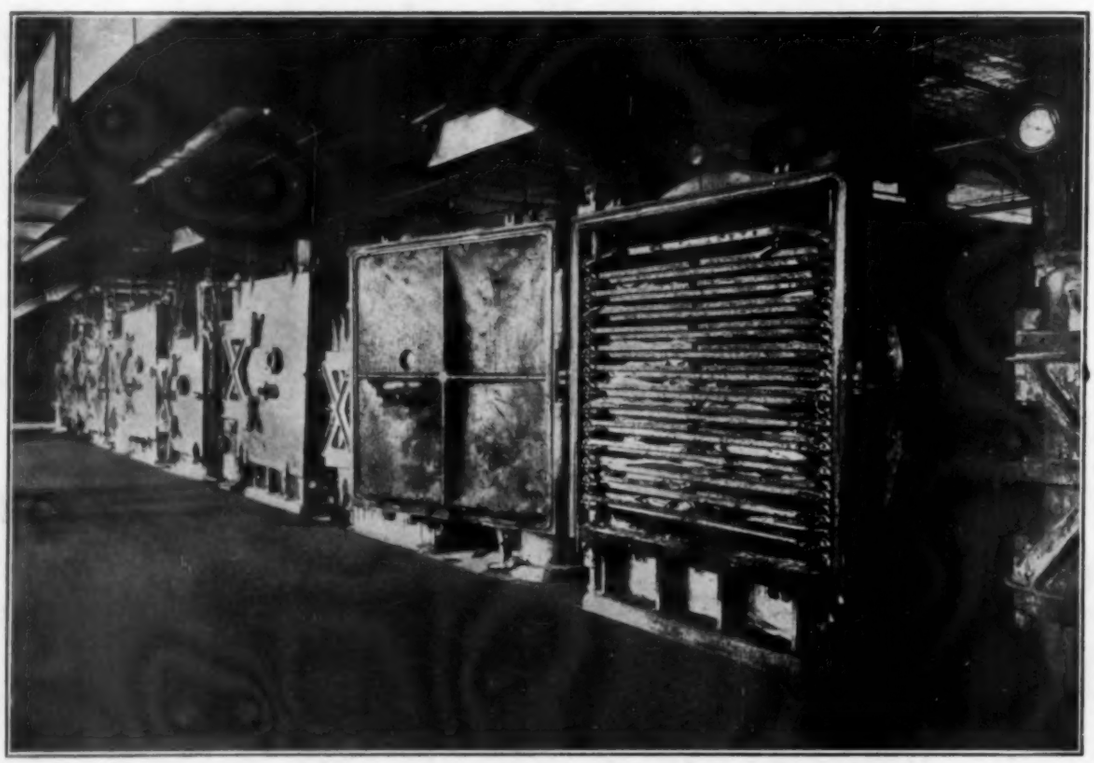

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THE RUBBER AGE AND TIRE NEWS

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The Working-Up of Rubber Scrap*

By Dr. Werner Esch

The value of rubber scrap depends on the use for which it is intended, and is established by the adaptability of the scrap, under consideration, for the production of new rubber goods. Therefore, the content of rubber of the rubber scrap is not a deciding factor, because, with the exception of certain high-grade scrap, the working-up process does not produce a pure rubber substance of equal value to the washed and dried crude rubber, but one which contains sulphur and other fillers as well as the crude rubber. This rubber-like mass is called "Regenerate" (reclaimed rubber).

Scrap rubber has other functions, under certain conditions, which are very useful. That is when the rubber scrap is used in the production of other rubber goods without any additional substances. For example, the scrap from red inner tubes can be used directly for red beer bottle washers by simply cutting them out with a die.

As a general rule black or dark colored rubber scrap has less value than white (gray) and especially red scrap. The black or dark colored scrap cannot be worked up into white or red goods. On the other hand, red or gray rubber scrap can be used in black rubber goods with suitable additions of lamp-black.

The red rubber scrap has a higher value than the same kind of rubber scrap in white or gray, because, in producing red rubber goods very small proportions of red color are used, while, in the production of gray or nearly white rubber goods, very considerable amounts of very heavy coloring materials are necessary as lithopone and zinc white. So that the red rubber goods are considerably less in specific gravity than the white on account of the heavy fillers used in the white mixing.

Colorless Rubber Scrap

Occasionally there comes on the rubber scrap market, colorless rubber scrap. For example, transparent rubber nipples and many other rubber goods made in similar manner. This colorless rubber scrap contains about 80 per cent pure rubber substance and can be easily dechlorinated by treatment with an alkali solution, thereby forming a material which has nearly equal value to the washed and dried crude rubber.

Another material of importance which produces rubber of nearly equal value to the crude rubber is the rubber obtained from the cloth fabric after it has been through the spreader. This spread fabric is treated in a special bath so that the rubber layer is easily removed from the fabric. The rubber obtained from this operation after washing and drying is nearly as good as crude rubber. Therefore, spread fabrics have the highest value of all scrap for recovery purpose. The amount of recovered rubber obtained from this source is not very large, since, the spreader uses only a small amount of rubber and this is put on in a very thin layer.

Similarly the so-called "patent rubber" scrap is of high value. This is obtained from the production of "patent rubber" goods. This scrap is easily recovered because the rubber is vulcanized with sulphur chloride.

The recovery process for "patent rubber" scrap is as follows: the scrap is finely ground then heated with caustic soda solution at 130°-145° C., generally under pressure. The caustic soda is washed out on the wash rolls and the material is sheeted out into thin sheets, and dried. The material thus obtained has a brownish color and can be used in place of washed and dried crude rubber in bright red or white mixings. The devulcanization is much more complete if there is added, aniline, pyriden, quinoline, etc.

Scrap Divided Into Two Classes

The scrap from rubber goods is divided into two classes, non-floating, as in white goods, and floating. This latter class is further divided into transparent, red, among which is beer bottle washers, and black floating rubber scrap. The latter is generally ground fine on the grinding rolls, mixed with oil, especially wood oil, then heated under pressure with steam at 10-12 atmospheres, dried in a vacuum dryer and then milled together.

Red floating rubber scrap contains no red "patent" rubber scrap since the antimony sulfurette is changed to a grayish-black by the recovery process. Red floating bottle washers contain about 14-20 per cent of oil and paraffin-like constituents, which in the heat is sufficient to render the rubber material plastic. In order to reclaim this matterial it is finely ground and then heated with steam at 10-12 atmospheres for 1-2 hours, dried, and milled.

Another kind of scrap is that from heavily compounded rubber goods. This is very hard to make plastic and requires a large amount of oil added during the grinding. The ground rubber scrap with the oil added is heated at about 145° C. in a double jacketed devulcanizer provided with agitation. Then it is washed, dried and ground on a grinding mill until it is free from lumps and is a smooth tough rubber-like product. As a rule this product is used only to produce cheap compounds.

Up to this point we have considered scrap which contained no fabric. By far the larger percentage of rubber scrap contains fabric. The reclaiming of this scrap was first done by the Mitchel process, in which the fabric is destroyed by sulfuric acid and this latter is neutralized by treatment with a solution of caustic soda.

The so-called acid process has been replaced, since 1900, by the alkali process of A. H. Marks. This depends on the fact that the finely divided rubber scrap containing the fabric is heated with a ten per cent caustic soda solution under a pressure of 10-12 atmospheres for a devulcanizing time of about 10 hours, thereby softening the fabric without charing it. So that it is easily washed out on the wash rolls. The

*From Kunstoffe.

washed reclaim is dried to a certain extent and then put on hot grinding rolls and milled together, thereby evaporating the remainder of the moisture. A process due to R. B. Price, which is a modification of the above process, in which a very concentrated solution of caustic soda is used. So that it is only necessary to subject the ground scrap to persistent boiling in an open boiling vessel in order to produce the desired results. Both of these processes are carried out on a large scale especially for working up of old automobile tires into reclaimed rubber. The small alkali residue which the alkali reclaim contains, proves to be a good preserving medium for this reclaim and does not cause any trouble when the reclaim is worked up into rubber goods.

In the case of rubber scrap which contains a large amount of fabric, instead of destroying the fabric by means of chemicals, the rubber material can be separated from the fabric by mechanical means. A suitable machine for carrying out this process is built by the firm Fr. Krupp-A. G. Grunsmerk in Magdeburg-Buckau, according to the specifications of H. Panther. For carrying out the Panther process the rubber scrap is not finely ground but torn to pieces by means of a tearing machine which is provided with means to prevent heating up. The small particles are separated from the small amount of fabric which has rubber material adhering to it. The torn up rubber is conducted by a bucket conveyor to a sifting machine, then it is centrifugalized goes through a shaking sieve and a separator which makes a very complete separation of the fabric from the rubber. If the rubber scrap is of inferior quality and therefore hard, the separation is so good that the defabricized rubber can be worked up without special preparation.

In the case of automobile tire fabric scrap each piece of fabric is covered with an especially good rubber mixing, which contains about 78 per cent of rubber. The material, after being defiberized is placed in a washing hollender filled with warm water and washed. The fabric and rubber and fabric particles sink while the rubber floats. This rubber material is then made plastic by running it through the alkali process.

All of the four processes we have designated suffer from the disadvantage that the rubber may perhaps contain metal or the scrap may contain enclosed metal wires. In order to produce a reclaimed stock it is necessary to either cut this metal out before reclaiming or remove the small metallic particles after reclaiming. These processes are imperfect in many respects.

Foreign Markets and the Manufacturer

By J. V. Aguirre

Export Manager, Mason Tire and Rubber Co., Kent, Ohio

The foreign market is the pie of strife and practically all manufacturers are whetting their knives to cut for themselves a slice. Manufacturers of rubber goods, and of automobile tires in particular, have readily recognized the promising field that the countries across the sea will be for the distribution of their products in the future, if not at the present moment.

As a result of the World War and the inability of manufacturers in Europe to supply the needs of merchants in foreign countries, our manufacturers were called upon to furnish the requirements of the world at large.

Automobiles in large quantities were shipped to every corner of the globe. The world became a really attractive field for American automotive products. Until that time the demand had not been sufficient, even for European manufacturers to adopt American methods of standardization and quantity production.

The development of the automobile business in foreign markets was retarded by insufficient and inadequate roads. Much progress has been made in this direction and today every country in the world is giving particular attention to the opening of new arteries of transportation, to supplant railroads in many places, and to link cities that previously could boast only of "Mule Power" as means of transportation.

In many countries the railroads have been operated and controlled by outside capital—by corporations that had obtained franchises for a hundred years in some cases, and thereby eliminating outside competition entirely.

Under this condition the service rendered to the public has been unsatisfactory in every respect and it is only natural that the advent of the truck and the automobile should be hailed with more than passing interest.

Despite the progress that has been made and the increased exports from this country the fact remains that the United States has eighty-five per cent of the number of automobiles in the world and more tires and tubes are sold in New York City alone than in all the cities of the world together. But this large percentage in our favor will eventually be reduced and the number of automobiles and trucks in the rest of the world will represent a profitable field for us.

The future of the tire manufacturer in the overseas markets is bright. The present justifies the adoption of a policy of preparedness—of active and concerted effort—of intensive advertising and the establishing of business relations with our friends abroad on a fundamentally sound basis of mutual satisfaction. The manufacturers applying the same honest, fair and above board methods to the foreign markets that they apply to the domestic trade will gain the good will and the co-operation of the merchants abroad, and further will build permanent and profitable connections.

The Mason Tire and Rubber Company has launched its export campaign in the liberal, sound and up-to-date manner that has featured everything else that it has done.

The introduction of Mason tires abroad was not attempted until the production was sufficient to take care of the domestic demand. Prompt delivery is essential in export trade. In many cases customers are located thousands of miles away from the source of manufacture. Mason products were offered after no doubt was left as to the performance and service they would render to automobile owners.

Climatic and road conditions vary in every country. To offer a bargain to a foreign merchant is the first step towards ruining his business. He prizes his reputation in the community above everything else and he must offer to his clientele merchandise that is dependable and serviceable.

The policy of the Mason organization is to conform to all requirements that tend to bring closer relations with the customer whether he is located in Kokomo, Indiana, or in Helsingfors, Finland.

First class merchandise—products that will be an asset to the store owner, that will bring back satisfied customers and not adjustment seekers. Prices that, although in fair proportion to the true merit of the merchandise, will permit a large sales volume and a satisfactory margin of profit. Approved packing methods to conform with customers' desires and custom house regulations. Advertising co-operation that helps the distributor to dispose of his stock and to multiply his sales. Shipping facilities that will cause the prompt clearance of all orders at a minimum expense. Advantageous terms of payment that permit the merchant to capitalize his integrity and responsibility to the extent of disposing of his purchases before making payments.

Chrysil, a New Rubber from Rabbit-Brush*

By Harvey M. Hall and Thomas H. Goodspeed

Department of Botany, University of California

It is eminently desirable that a portion of the rubber consumed in the United States should be produced within our own borders. It is the only important commodity essential to modern warfare which we have not yet learned to produce. If the industry of rubber growing were once established, even though it yielded only a fraction of our normal needs, we could, through economy in use and through governmental encouragement in war time, render ourselves independent of other nations, who might refuse to supply our needs or who might be unable to transport their products across the seas.

These same arguments can be advanced for the support of investigations looking to the production of synthetic rubber and there is no doubt that this line of work should also be encouraged. It is even possible that the synthetic product will in time replace that from the plantations. We are not in a position to forecast what the future may bring forth in this connection, but the opinion of those best capable of judging seems to be that high grade synthetic rubber in large quantities is something which we need not expect for a long time to come, if at all. In the meantime, dependence must be placed upon importations unless we can discover some commercially profitable method of growing rubber plants in our own country. The list of plants to be considered in this connection is a long one. It includes various exotics some of which are now grown in foreign countries for their rubber but none of which have been given a conclusive trial here. Certain of our native latex bearing plants, such as the milkweeds, spurges, dogbanes, etc., are now under investigation by the Carnegie Institution of Washington with some promise of success. The Pinguay, or Colorado Rubber Plant (*Hymenoxys floribunda utilis*) has been unsuccessfully tried and the Guayule, a shrub native to our southern borders and to Mexico, is now under trial in Arizona. Since none of these rubber plants has as yet been agriculturally established in the United States it would seem worth while to give attention also to *Chrysothamnus* as a possible plant to be brought under cultivation for its rubber.

Guayule Planted in Arizona

If a further incentive is needed for the study of rubber plants suitable to our conditions it may be found in the extent of unused and apparently unusable lands that are still to be found in our western states. The introduction of new agricultural industries for the proper utilization of these practically idle lands is one of the most important problems that now confront the people of the arid West. While we hesitate to predict that they will ever be used for the production of rubber, yet that this is within the realm of possibility is evidenced by the planting of a considerable acreage to Guayule in southern Arizona in 1918 by one of the leading rubber companies.

Guayule is a small Mexican shrub belonging to the same botanical family as the Rabbit-brush, although not very closely related to it. The similiarity between the two is such that a consideration of the Guayule situation may furnish some evidence as to the possible worth of *Chrysothamnus*. The wild Guayule yields a "rubber" which had been imported into the United States in considerable quantity—(19,000,000 pounds in 1911) before the political troubles in Mexico interfered with the industry. The supply of wild shrub was constantly on the wane, which led to extensive experiments in propagation, selection, breeding and cultivation. The wild plants carry an average of 10 per cent of "Guayule gum," as it is called, but when they were brought under cultivation it was found that some plants yielded only 2 or 3 per cent, and in some cases less than 1 per cent of pure rubber. The application of scientific methods of breeding and selection, together with the control of environmental conditions of growth have now brought the yield to as high as twenty-seven per cent in a few plants. We understand that these high percentage strains are not suitable for field growing but that those selected for planting on a large scale yield about fifteen to seventeen per cent of rubber in their fifth or sixth year.

Experiments with Guayule

These experiments with Guayule extended over a ten-year period and are said to have cost one company alone in the neighborhood of $500,000. Their promise, however, may be inferred from the present intention of the company to undertake planting in Arizona on a large scale. Whether or not *Chrysothamnus* could be "improved" to the same extent is a question which we are unable to answer, for the two plants are so different in their life histories that methods used successfully with one might entirely fail with the other. Nevertheless it seems logical that the possibilities of both should be tested out before either one is exclusively selected for cultivation, since each possesses certain advantages which the other does not have. It is in order to draw a comparison between the two that the history of the introduction of Guayule into cultivation has been briefly outlined above.

The great superiority of Guayule lies in its high rubber content. As stated above, this averages ten per cent for wild plants as against an average of only 2.5 per cent for the *viridulus* form of *Chrysothamnus*. These figures are based upon pure dry rubber and dry shrub. Guayule, moreover, has been extensively studied; its habits, and its response to treatment, are at least somewhat understood, and the work thus far done upon it has resulted in the development of a fifteen to seventeen per cent strain. The improvement of *Chrysothamnus* could undoubtedly be brought about, at least to some extent, by selection and breeding. However, since it is presumably a cross fertilized plant, the separation of superior strains would be a more difficult matter than in Guayule. A starting point is indicated in that certain individuals of the variety *consimilis* actually ran as high as 6.7 per cent.

Guayule has a still further advantage in that the methods of field management, of milling, and of marketing are also established and the product is well known to the rubber trade. Here, however, the advantages of Guayule over *Chrysothamnus* seem to end.

As an offset against the above more favorable attributes of Guayule, and especially the higher rubber content, we find a number of points in favor of *Chrysothamnus*. These are here set down in order that the Mexican plant may be used to some extent as a gauge in measuring the possibilities of the other one.

(1) *Chrysothamnus* is a larger plant than Guayule, the wild shrubs averaging six pounds of rubber carrying wood, whereas the plants of the latter weigh one-half to three pounds, rarely attaining to six pounds.

(2) *Chrysothamnus* is a native of the western United States and is therefore adapted to our conditions. It grows where the temperature falls to zero and probably much lower, since it ranges up the mountains to over 7000 feet altitude. In the *consimilis* form it is known to grow over large areas where the temperature not infrequently reaches—20° F. Guayule, on the other hand, is too tender for any but our warmer valleys and even there its cultivation is apparently attended with some

* Continued from February 25, 1920, issue.

risk. Its introduction into this country is an extension of its natural range, whereas the cultivation of *Chrysothamnus* would be merely the utilization of a native plant adapted by nature to our region.

(3) *Crysothamnus* is very resistant to alkali, often growing on soils too alkaline for any ordinary agricultural crop. It could therefore be grown on land not now utilized and which could be obtained for a very moderate price. Guayule is sensitive to alkali.

(4) The water requirement of *Chrysothamnus* is considerably less than that of Guayule. It could certainly be grown without irrigation on cheap lands.

(5) The product is superior to that of Guayule. It would bring a higher price in the market and if need arose would more nearly replace the fine imported rubbers in our industries.

(6) *Chrysothamnus* is more easily and cheaply propagated, both from seed, which form in abundance and are easily germinated, and vegetatively. Both old plants and seedlings may be transplanted without loss.

(7) Certain cultural practices have been developed in connection with Guayule that result in an increased yield of rubber, and methods of operation have been devised that permit of cheap handling through the use of machinery, so that the crop is said to be "machine-grown." There is no reason to suppose that similar practices and methods cannot be perfected for *Chrysothamnus*. The larger size of the shrubs and their habit of throwing up numerous new shoots when cut back indicate the possibility of increasing the tonnage of rubber carrying shrub by the cutting back of the tops. Experimental work along these lines has not yet progressed to a stage where estimates would be warranted, but it is believed that a method can be worked out that will multiply by a considerable factor the tonnage of shrub per acre-year. It is possible that such manipulation may at the same time favor an increased formation of rubber in the tissues.

Possibilities of Chrysothamnus Should Be Investigated

It would seem, therefore, that the possibilities of *Chrysothamnus* as a cultivated rubber plant should be looked into more closely. Any species which gives even the least promise should be thoroughly studied in order to find, if possible, a new crop that will turn our waste lands into productive fields and at the same time safeguard the nation against a possible deficiency in rubber during critical periods. These investigations, as applied to *Chrysothamnus*, should be along several diverse lines, yet all leading to the same objective. They should include the following: detailed studies of wild plants for the purpose of discovering, if possible, better varieties or strains than we now have; garden experimentation in breeding and selection; modifications in environment, especially changes in the water relation, and the effect of methods of cultivation; the effect of varying amounts of alkaline salts on rubber deposition; and, finally, pruning and other experiments designed to test the possibility of increasing the amount of rubber bearing tissue and also of increasing the percentage in the tissues.

In case *Chrysothamnus* is brought under cultivation, its cultural requirements would need to be looked into very closely. At present, our knowledge of these is based upon observations of the wild shrub and upon a limited number of experiments in transplanting and in growing from seed.

These plants are not exacting as to their climatic requirements. The *viridulus* and *consimilis* forms grow readily from the lowest to the highest limits of the Upper Sonoran Life Zone and exceed these limits slightly in both directions. Expressed in another way, they range from fairly hot interior valleys, where the temperature runs to 110° F. in summer, to over 7000 feet in the mountains where snow falls to a depth of several feet and the temperature drops to—20° F. in winter. No difficulty has been experienced in growing these varieties in the botanical garden at Berkeley, Calif., both from seed and from root transplants, but it is doubtful if they will grow here as rapidly or as large as they do under conditions of greater summer heat. Transplanted seedlings are also growing at the Citrus Experiment Station at Riverside, but they are not at all vigorous. It is not known whether this is due to the very unfavorable climatic conditions that prevailed when they were set out in the field or to some other factor. Moreover, Riverside is in the Lower Sonoran Life Zone and therefore perhaps too hot in summer for these Upper Sonoran plants. While the exact geographic limits for the cultivation of *Chrysothamnus* will need to be determined with some accuracy it seems reasonably safe to say that, as far as climate is concerned, it may be grown in any of the larger interior valleys of the West except perhaps those of the extreme north and the very hot Lower Sonoran valleys of the extreme south.

Requirements of the Plant

The moisture and soil requirements have not been carefully determined. As indicated above the most promising forms grow on valley bottoms where there is a moderate amount of moisture and where the soil is moderately to strongly alkaline. Salt-grass (*Distichlis*) is so common a concomitant of *viridulus* and *consimilis* that its presence undoubtedly indicates favorable soil conditions. That the plants can be grown with a minimum of precipitation is indicated by their abundance in places where the precipitation drops to below two inches in some years, but in these places it flourishes only on valley bottoms. The soil is always more or less sandy, but the plants grow readily, or at least make a satisfactory start, in the heavy clay of the botanical garden at Berkeley.

An ecologic consideration always to be kept in mind is that *Chrysothamnus* is not a strong competitor among plants. It is easily crowded out by other species, especially by Greasewood if the alkali content of the soil is high and by Sage-brush if the alkalinity is slight, so that the area at present covered by it could be greatly extended through the removal of these more aggressive shrubs. That this is true as regards Sage-brush is attested by the experience of settlers who find that Rabbit-brush (especially the gray forms, *e. g., gnaphalodes*) almost always takes immediate possession of the ground after the removal of the Sage-brush. This leads to the conclusion that the present occurrence of Rabbit-brush does not by any means reperesent the total area suited to its growth. It also indicates one rather simple method of extending the growth of the shrub, namely by removing its competitors.

In case the cultivation of *Chrysothamnus* is ever made a commercial success, the first plantations will presumably be located where the best varieties now grow wild. Aside from the assurance that such locations would provide the climatic, soil, and other requirements for successful growth, this would enable the management to utilize the wild shrub as a supplementary supply percentage than the improved cultivated strains.

Suitable Districts for Cultivation

It is perhaps premature even to suggest districts where plantations might be located but the mention of a few may be not without interest. In Owens Valley, California, for example, it happens that the city of Los Angeles owns nearly 200,000 acres of land, partly covered with *Chrysothamnus* and not at present utilized except to a very limited extent for grazing purposes. It is estimated that at least one-half of this is suitable to the growth of *Chrysothamnus* of the *viridulus* form. Similarly, large suitable areas now partly covered with Rabbit-brush are located in Fish Lake Valley, Big Smoky Valley, Walker River Valley, near Mono Lake, and elsewhere in Nevada and eastern California. In Utah and in Colorado (especially the San Luis Valley) there are extensive tracts of practically waste land where the varieties *consimilis* and *pinifolius* are abundant. Finally, the Sacramento and San Joaquin

valleys of California include large acreages of practically unused alkali lands where, unless the summer heat is too great, *Chrysothamnus* could probably be grown.

Chrysothamnus is thus seen to be a hardy plant capable of growing under a considerable range of climatic and soil conditions. It is apparently best suited to the alkaline plains of the Great Basin, especially if the soil is somewhat sandy. This fact, together with certain other practical considerations, would indicate that if the plants are brought under cultivation the first plantations should be located in these interior districts, some of the most promising of which are those indicated above. Zonal position should be taken into account since it seems unlikely that the best sorts of Rabbit-brush can be grown to advantage outside of the Upper Sonoran Life Zone.

Summary

(1) It was the object of this investigation to discover a supply of rubber in native North American shrubs which might be used in time of war, thus rendering the nation to some extent independent of overseas importations of this substance. The studies were extended to include a preliminary inquiry into the possibility of bringing the plants under cultivation. *Chrysothamnus* or Rabbit-brush, was the genus of shrubs especially studied.

(2) The work was fostered by the Committee on Scientific Research of the State Council of Defense for California and by the University of California. It was furthered through the aid of a considerable number of correspondents.

(3) Chrysil is the name adopted for the particular kind of rubber found in *Chrysothamnus nauseosus*. It is a rubber of high grade and vulcanizes without difficulty.

(4) Rubber was found in two closely related genera of shrubs, namely, *Chrysothamnus* and *Haplopappus*. Only the former yields Chrysil. The most important species of *Chrysothamnus* is *C. nauseosus* under which are recognized twenty-two varieties. Twelve of these varieties have been examined and rubber found in all of them although individual plants may be devoid of rubber.

(5) *Chrysothamnus nauseosus* is a large shrub, the average weight being from four to six pounds. It grows readily from seed and reaches maturity in from six to eight years.

(6) The species is widely distributed in western North America, often inhabiting alkaline flats.

(7) The largest stands of Chrysil-bearing shrubs are in Colorado, Nevada, and Utah. The plants with the highest rubber content are from Nevada and California. The total amount of rubber present in wild shrub is estimated at over 300,000,000 pounds.

(8) The rubber occurs in the individual cells and is not a latex-rubber. Its place of occurrence in the plant has been rather definitely located. Methods have been developed for its detection by microscopical examination as well as by chemical analysis. Various experiments indicate that the chemical methods adopted are reasonably accurate; that great care must be exercised in the preparation of samples for analysis; and that samples do not deteriorate when stored for periods of several months.

(9) The results of one hundred and eighty chemical analyses and eighty microscopical examinations are tabulated. These indicate an average of 2.83 per cent of rubber in the variety *hololeucus*, 2.69 per cent in the variety *pinifolius*, 2.52 per cent in the variety *viridulus*, 1.97 per cent in the variety *consimilis*, and lower percentages in other varieties. The low-percentage varieties are all comparatively uncommon. The highest absolute percentage was found in a plant of *consimilis* collected near Gerlach, Nevada, which analyzed 6.57 per cent of pure rubber. The second-highest was a plant of *viridulus* from Benton, California, which yielded 5.56 per cent.

(10) Chrysil occurs in the plant in greatest amount at about the soil line. In the root it is present in only the upper part. In young twigs and leaves it occurs in only small amounts. The richest tissues are found in the cortex and the medullary rays, the former carrying much more than the latter.

(11) the amount of rubber varies with the botanical variety; the best varieties being those which inhabit alkaline soils.

Rubber in Dutch West Borneo*

It may not be generally known that the cultivation of rubber has greatly increased in West Borneo during the last ten years, most of the estates being owned by Malays and Chinese. Hitherto, little or no capital has been invested by Europeans or Americans, because the country has simply been a field for wild and irresponsible speculations, and, as such, its opportunities were not recognized. Sound investors have been afraid to go in there, because many estates had been opened up by a number of people who formed syndicates purely for speculations, and then cleared out as soon as they had accomplished their object.

Accordingly, owing to such fast and loose methods, the country remained unknown, although the condition of the soil, labor, and means of transport are such that the cultivation of rubber is in every way practicable, and besides, the field is new. The climate also is especially adapted for rubber, as rain falls there in right proportions all the year round, and unlike Java, there is no dry season to contend with. That the soil is excellent is shown by the rapid growth of the timber, and the large yield of latex; and labor conditions contrast favorably with those in the Federated Malay States and Sumatra, as those places depend for labor on emigration from Java, China, and British India, while Borneo has an abundance of local labor. The Dyaks are adapted for heavy labor, such as falling timber, and the Malays for light work, as weeding and tapping, etc.; however, conditions are not ideal, and there is no doubt that a big increase in the cultivation of rubber there might cause immigration to become necessary, but at present the few Europeans that are there work their estates with local help.

Again, the output from seven-year-old trees which had been planted too close, and had never thinned, and averaging yearly 3.65 lbs. per tree, compares favorably with results from seven to nine-year-old trees elsewhere. In Malacca, the average annual yield per tree is 2.42 to 3.41 lbs.; in West Java 2.42 lbs.; in Ceylon 0.77 to 1.65 lbs.; and on the East Coast of Sumatra 3.98 lbs. for choice estates, and 2.97 lbs. on average estates. By contrast, there are some well-kept estates in Sambas, where the trees were well placed, and the yield from six to seven-year-old trees amounted to 5.28 lbs. per tree a year.

Transport facilities, too, are not perhaps what they might be, but then that difficulty is overcome by planting estates on the rivers whence cheap transport becomes easy. In the districts of East Sumatra, where rubber is fairly well developed, thousands of guilders are spent for the building and upkeep of the roads, motor-trollies, and bullock carts, in order to convey the rubber to the nearest railway or port—and this is expensive.

In conclusion, it must be remembered that most of the estates are in the hands of Malays and Chinese who do not get anything like the yield of rubber that they might, if they used more scientific and up-to-date methods. Borneo undoubtedly deserves investigation by men who prefer to invest their money in a new country.

* The Dutch East Indian Archipelago.

Determining Permanent Set of Rubber Goods

By Earle L. Davies

For a long time laboratory men have felt that the present methods of making set tests on vulcanized rubber were so unreliable that they only used them when called for on specification work. About two years ago C. O. North, working with the writer, worked out the following method for the physical testing of vulcanized rubber. The purpose of this article is to explain more fully the reason for this method.

Before vulcanization, our compounds are plastic. During the "cure" they are changed from this plastic state to a more or less elastic state. However, we always have a certain residuum of plasticity in the cured compounds. In addition to this there is undoubtedly an arrangement of the elastic material which might be likened to a network of fibres which do not all lie in a line with the direction of the stretching. Under tension these "fibres" would be straightened out and would not again spread out to their original positions. There is again evidence that these "fibres" may be of such irregular shape, having bends or knuckle-like projections such that in one stretch these projections will cause the "fibres" to catch, but upon release of tension this hold will be loosened so that on another stretch under the same tension measurably more elongation will be produced by the same tension. It must be borne in mind that if these elastic fibres are stretched beyond their elastic limit, some of the bonds will be broken causing an apparent set which should not be counted against the stock. The set test then should, in our opinion, be such that it should bring out the inelasticity of the stock caused,

The Nature of a Set Test

1. By plastic flow,

2. Complete straightening of the "fibres" including those tangles.

Three methods were considered for accomplishing this end:

1. Decrease in tension under given constant elongation.

2. Increase in elongation against time under constant tension.

3. Stretching for a given period of time to a given elongation, releasing, resting, and repeating until there was no further set.

We realized that our test must be performed in the most practical manner in order that we might have facilities for extending the test to as much of our general and routine testing as possible.

The possibilities of these methods may be summed up as follows:

1. Decrease in tension under given constant elongation.

(a) We have tried out this method in various ways and have found no advantage from using it.

(b) The nature of the records of results is not such as to draw any direct association between them and the thing we wish to measure; it is a case of measuring length by units of weight.

(c) To conduct the test properly the time required makes it impractical.

(d) It involves an expenditure of money for balances which is not justified.

2. Increase in elongation against time under constant load.

(a) It is obvious that in their use, most rubber goods are subjected to the effects of more or less constant load rather than constant elongation. This method is advantageous from that standpoint.

(b) After considerable work, however, we became convinced that reliable results could only be obtained by repeated applications of the load, each of which should remain on the piece for a matter of hours.

This test was therefore abandoned in spite of its merits because it was not considered practical.

3. Stretching for a given period of time to a given elongation, releasing, resting, and repeating until there is no further set.

We, therefore set about working out the most practical method for measuring set reliably by this method.

We do not attempt to argue the question that a vulcanized rubber compound has no true elastic limit. We do believe, however, that there is a fairly wide range beyond which the compound shows excessive rupture. Our first problem was to find this range. Our method was to prepare thirty-two pieces each, of seven different compounds. These compounds were selected to be representative of pure gum, cheap friction, high and low gravity tread, cheap treads, and cheap mechanical goods stocks. Four each of these pieces were stretched to 10% of the breaking elongation four times, held for ten minutes each time, rested ten minutes between stretches and finally ten minutes after the final release the set was measured. Other series were stretched 20%, 30%, 40%, 50%, 60%, 70%, and 80%. The results appear in Table I.

TABLE I.

Stock.	Elong.	10%	20%	30%	40%	50%	60%	70%	80%
Pure Gum.....	% Set	0.0	0.0	2.0	8.0	6.0	6.0	8.0	16.0
Cheap Friction		0.0	1.0	3.0	6.4	8.5	16.5	27.5	...
Friction		0.0	0.0	4.0	0.0	1.0	8.0	20.0	24.0
Low Gv. Tread.....		0.0	1.0	7.0	10.0	17.0	25.5	41.0	51.0
High Gv. Tread.....		0.0	1.0	7.0	12.6	19.0	29.5	59.0	53.5
Cheap Tread		0.3	2.0	6.0	12.5	27.5	33.5	40.0	34.5
Mechanical		1.0	3.0	5.0	14.5	23.5	52.0	42.0	55.

At 80% one of the pieces of pure gum broke on the fourth stretch; on the others there was no more than one piece of each finished. At 70% one piece of cheap friction broke; all other pieces finished. In every case a point is reached beyond which the set goes up more abruptly. This point, we believe, represents the limit of the range.

It seemed impractical to make a separate limit for each compound or class of compounds. In the majority of cases the break in the curve occurred between 60% and 70%. Accordingly 60% of the breaking elongation was fixed as the most desirable point to stretch.

The Effect of Stretching

We then set about to determine the effect of successive stretching. Ten pieces of stock were broken and the average elongation taken. Ten pieces of each stock were then stretched to 60% of this elongation, held ten minutes, released and measured after ten minutes. This was repeated to four stretches. The results shown in Table II are each the average of ten tests:

TABLE II.

EFFECT OF REPEATED STRETCHING ON SET.

	Set After					
Stock.	1st Str. %	2nd. % Add.	3rd. % Add.	4th. % Add.	Total %	Set@1st str. fig. to % of total set
Pure Gum	4	2	0	0	6	66
Cheap Fric.	13	2	1	0	16	81
Friction	4	2	2	0	8	50
L. G. Tread.....	18	1	5	1	25	72
H. G. Tread.....	14	6	4	1	25	56
Mod. S. G. Tread....	19	12	8	1	40	47.5
Cheap Mechan.	22	9	8	1	40	55

Attempts have been made to cut down the time required for stretching and for resting between stretches, but the results do not seem quite reliable, although for every day work in our laboratory, we have used a shorter time. After using it for two years, while we do not consider it perfect, we believe it far superior to any other method which has been proposed. We believe that the evidence is sufficient to warrant its being used.

Psychological Discussion upon Individualism

By D. Repony

As raw materials represent the body of the factory, so do management and labor represent the dual soul of production.

At the present time the problems of labor shortage and labor unrest require the utmost attention if we are to be able to maintain production, which the world needs now more than at any time in human history.

The best remedy to effectively check the labor shortage is to work with ambition. Any one knows that it is not the time nor the number of men working, but the quantity of work accomplished that is important. Any man can do either a great deal or practically nothing. The happy and satisfied working man is the producer, and therefore it is the duty of the management to study the question of how to keep each man interested in his particular work. This problem, however, is very complicated and cannot always be solved by the general method of paying high wages. As a matter of fact, the more a man gets, the more he wants, and therefore a permanent satisfaction in this direction will never be reached. It is not how much a man is paid for his work, but it is how it compares with the pay of the other men doing the same kind of work. If they all are equally paid, it does not seem to be enough to the producing employe; if one has more than the other, the former is satisfied, but the latter will not rest until he gets ahead. Is there any end to the dissatisfaction occasioned by the size of the pay envelope?

A Temporary Adjustment

When the employe gets more, the factory must charge higher prices for their products, and consequently the employe has to pay more for all he buys, so this does not solve the problem—it is merely a temporary adjustment.

It is not the object of this article to solve the world problem. The object is how to eventually establish satisfaction among the employes in rubber factories, taking advantage of every man's psychological qualities and what to do to make every working man interested in his work.

Not all men can be made happy and satisfied by the same remedy. As there are among a million faces no two alike, so in the same proportion the individuality of each man is different. No one sees the world in its true appearance, but each with his own eyes, and in accordance with his own individuality. The main factor in human life is satisfaction. It is not whether a man possesses a million dollars or one dollar, but whether man is satisfied with what he gets.

I once listened to a gentleman lecture about the poorest class of people of Siberia. He told of how poor they were and how they dwelt in huts, and lived on cabbages and potatoes. The audience shivered, and many remarked, "Isn't it terrible?" Yes, it is terrible for us, because we consider it from our point of view, and it yet remains a fact that these people are more satisfied and happy than many in far better circumstances.

Complete Satisfaction Impossible

It must not be misunderstood that any man of our progressive civilization can ever be perfectly happy and satisfied, and to compare it we may see the paradox in the following stories.

A long time ago when a king was deadly sick, his doctor told him that the only remedy that could save his life was to get a shirt that had been worn by a perfectly happy and satisfied man. The advisor of the king thought that this was a very simple thing to obtain. A number of messengers were sent out. First, they went to the aristocratic class of people but they could not find among the many one who was satisfied. Then they went to the most prosperous of the citizens, but here also they could not find one who was satisfied. One citizen claimed that the only son he had was a drunkard; another was unfortunately married to a woman for whom he had no affection or love, while others could not get along with their neighbors. And so it went down through all classes of people, without finding one who was satisfied. Discouraged in their effort, on the way back home they passed through a forest, and heard a man singing. They stopped and asked him if he was perfectly satisfied and happy. He said he did not even know the meaning of the word dissatisfied. So they asked him to give them his shirt, but he exclaimed, "Shirt! I have never worn such a thing."

Human life is intellectual. Unhappiness and dissatisfaction are seldom the reflection of our body, provided we are healthy. A deformed person usually thinks a great deal of his fine appearance.

No one wishes to see his face in the looking glass as it is reflected to him, but imagines that the real face is of much handsomer appearance. The most successful photographers are those who retouch pictures with idealized expressions.

Unhappiness and disssatisfaction are thus the reflection of our minds, and happy is the man who gets most out of life because his desires are easy to satisfy.

But since reaction is the consequence of action, so it is only natural that the satisfied man has not much of a real human mind, and yet it is true wisdom not to desire what a man cannot get, but it is the gift of nature that any man's desire can be satisfied, provided the desire is right and his ambition is great.

Lack of interest and lonesomeness are the incubators of unhappiness and dissatisfaction. Neither our bodies nor our minds will benefit in resting while doing nothing. Dreamless sleep is the only rest which we require. Isn't man always thinking? Isn't it hard work to be compelled to sit absolutely still for a number of hours?

To keep busy at something we like means we will be happy, but to be compelled to do certain work which we do not like means slavery; to a man not interested in his work the blowing factory whistle sounds like a call to jail. A man not interested in his work becomes tired, but as soon as he comes home, and attempts some work which interests him, he will do more in one hour than he has been doing for a whole day in the factory, and will not admit that he is tired.

Interest in Work Necessary

A man in business for himself usually has very long working hours, never complains and is very much surprised when his employes ask for shorter hours. Even when a man is in pain, and becomes intensely interested in something, he forgets all about his misery. On this principle is based the doctrine of Christian Science. Consequently a man interested in his job will turn out twice as much in quantity or in quality.

To an interested man hard work is easy and long hours seem to be short. Thus when any one asks for shorter working hours, it is not because the work is too much, but because the work does not interest him. Herein lies the question of how to interest a man in his work, and the problem, due to complex individuality, is difficult. Much can be accomplished, however, provided the management would give to this matter as thorough consideration as is given to the purchasing of raw materials. In the first place, an employment department of highly competent and experienced men should be formed. The staff of this department should be composed of men who are able to study and to understand the individual qualities of the men employed. A man experienced in this field can readily tell by the physi-

ognomy of the applicant the kind of work to which he is most adapted and which will interest him the most. Of course there are exceptions and some men will never be understood, and again others do not know what they are really after.

Some men are absolutely hopeless for anything or everything, and yet some men, declared by a department foreman as hopeless, might be the best men if transferred to another department.

Practically every man is up to a certain point subject to the influence of other men, consequently it is a question worthy of consideration whether it will not be better to have two foremen instead of one. One should take care of the office, records, and supplies, etc., the other should be a man full of energy and ambition, and should be placed at the head of the workmen as a shining example.

When Napoleon's army lost its morale in the battle of Jena, the appearance of Napoleon in front of the soldiers inspired them to such an extent that they went forward fearlessly and won the battle.

Organization Depends on Leaders

Organization is really the shadow of the man ahead of it. If the leader is the right man, the organization will succeed, because the right leader will only keep the right men. The big man at the head of the organization is he who is interested in every detail of the entire business and who secures his information from all sources before he makes his decisions.

The success of General Goethals in building the Panama Canal was due not only to the fact that he laid out the plans, but that he made a daily tour through the entire working zone, and knew as much about the men regulating the train switches as he knew about his engineers. To interest men in their work it is desirable to have them become stockholders, and no matter how little stock they may possess, the possession of it has a moral value which serves to increase their interest in their work.

A voluntary increase of 10 per cent does more to promote interest and satisfaction than 50 per cent obtained by demands or by strikes.

The discouragement of any man through unjust action on the part of his superiors causes great dissatisfaction; such experiences by some men will never be forgotten, but will serve to make good men distrustful of their employers.

When a man is promoted due to his ability and service, his greatest enemy will not desire to take from him the rewards of his ability, but when a man is promoted through the influence of his friends, frequently even he is not satisfied.

It is often difficult to decide whether a man should be paid in accordance with what he is accomplishing, or whether his pay should be determined by the length of his service and his experience. The loyalty and faithfulness of years of service is worth something, but all cases are not the same. Here is the point where the fundamental laws of the labor union are wrong. To protect a weak man is certainly a noble act, but to make him equally efficient would be much better. However, this can only be done when his individuality is considered as an essential factor.

No man will trade a cow for a cat, and no man will sell his good work for the same money another is getting for his poor work, and therefore to be just the amount of work given to men to accomplish in a day should be based on ability and capacity.

When a man is doing piece work, or gets a bonus, and makes more money in the first year of his employment than others do after ten years of work, dissatisfaction can be checked by putting the old help on the new job. To the old men should be given the privilege of making the most money.

Much dissatisfaction will be banished when the employes realize that the officials of most firms are really harder worked than the laboring men. The gravity of their responsibility is more pressing and exhausting than the 100-lb. bags the laborers carry on their shoulders the entire day.

Before discussing some of the individual characteristics, we must realize the fact that this is a difficult task, because as there are no two faces exactly alike among a million, so also the individual characteristics of any two men are not exactly the same, and yet as we are able to classify the face expression among the millions concerning similarity of expression in maybe 5000 groups, so also the individual characteristics we should be ably to classify at least in a few main classes, and so let us try to take up the following course.

Classification of Workers

1. Some man when he is possessed of a little authority is capable of doing five times as much work as when he has no authority at all. This type of man is the best kind for a foreman. He is full of dissatisfaction, but is counter-balanced with high ambition.

2. Similar to this type is the man who has fair ability but who does not possess much activity. He is best suited to do routine work for his life time.

3. Another man is the one who does not require authority over others, and who will do the most when given authority over himself, that is, when it is left to him to do his own work. This type of man will never bear the burden of command by bosses, will not take a commanding position, and therefore is not well suited to become a foreman. He is a valuable man and should be employed on such work as requires individual attention.

4. The contrary type to the first group are those who will not do anything of their own accord, but must be shown every little thing, and will even then work slowly. This type of man will stay in one job his life time, provided he does not do much. The greatest number of men belong in this class, but they are as little profitable to the employer as they are profitable to themselves. They are not interested in their work, and it is very hard to interest them in anything. This type of man is best suited to watch presses, or to take care of automatic machines, where the mind can sleep most of the time.

5. There is another distinct group, those who do not care what they are doing as long as they can make money. This group is excellent for piece work.

Opposed to this class are those who would not do hard work for any length of time; even when they would be making five times as much money as they ordinarily make. This grouping, however, does not help as long as we do not realize a man's individuality and, therefore, the best plan to follow is to observe every man, and change him from place to place until it is seen that he is interested in his work.

Another factor, however, must be taken into consideration, which at first seems to offset the entire theory of individualism. That is, although the individuality of many men can be changed by the influence of others or education or by their own will power, yet seldom can the individual characteristic be altogether changed by these factors. Considering the fact that many great achievements have been accomplished by men having no education, and that many well educated men have hardly been able to earn their living, it is well nigh proven that individuality remains an essential factor. Education resembles a set of fine tools, but the man must do the work.

Booklet on Transportation

The Guaranty Trust Company of New York has issued a booklet on the Transportation Act of 1920 (the Esch-Cummins bill), under which the railroads of the United States have been returned to their owners. The text of the law, as reported by the Conference Committee of Senators and Representatives, is printed in full and carefully indexed. There is also given a summary of the act for ready reference, and a brief account of the history of Federal regulations pertaining to railroads and other common carriers, beginning with the enactment of the Interstate Commerce Act in 1887. Copies of the booklet may be had upon request to the company.

News of the Rubber Association

Committees of Rubber Association of America, Inc., Hold Important Meetings—Recent Elections to Membership in Association—Important Committees Appointed for the Ensuing Year

The usual regular monthly meetings of the executive committees of the Foreign Trade Division, Mechanical Rubber Goods Division, Tire Manufacturers' Division and the Industrial Relations Committees of the Rubber Association of America, Inc., were held during February, but the matters handled were of a routine nature. The Mechanical Rubber Goods Specification Committee, which was reorganized a short while ago, is now actively functioning and at recent meetings a considerable number of important questions connected with the specifications for mechanical rubber goods in use by the railroads and many other organizations were given attention, and the work of the committee in this direction promises to be of much value to mechanical rubber goods manufacturers in general.

Traffic Committee

The Traffic Committee of the association is handling with the United States Railroad Administration several matters of importance to the industry and particular mention should be made of the application of the Traffic Committee to the Consolidated Classification Committee, at Chicago, for reduced carload ratings on guayule rubber and the less carload and carload rates on rubber compounds. The Traffic Committee was given a special hearing at Chicago on Friday, February 20, and a favorable decision is expected.

There is now pending before the same committee an application for a reduction from one and one-half times first class to first class on pneumatic tires in less carloads on all kinds of packages, which is to the tire manufacturing industry a very important subject. The application is predicated, to a certain extent, upon the greatly increased use of paper for the wraping of tires.

An application is now before the Western Classification Committee at Chicago for a reduction in the ratings on crude rubber from first class L. C. L. to second class and from second class C. L. to fourth class. An application to the Consolidated Classification Committee is being prepared for the establishment of a rule permitting the mixing of mechanical rubber goods and other general lines of rubber goods in carloads, on the basis of third class carload minimum weight thirty thousand pounds. If this application is granted it will have the effect of permitting jobbers to secure complete stocks of goods at a considerable reduction in the present rate and will enable them to order more advantageously.

A recent accomplishment of the Traffic Committee was to secure the adoption in the Virginia state classification of the provision for the acceptance of pneumatic tires in wrapped bales or bundles. Heretofore the classification was restricted to tires when shipped in crates.

An application is being prepared for submission to the Consolidated Classification Committee for a provision in connection with the specifications for rubber hose which will be more flexible than those now effective in so far as the use of paper for wraping is concerned. It is desired to secure a classification provision which will be not so restrictive as to the kind of paper which may be used for the wrapping of hose as is the present one.

There will be filed shortly with the State Public Utilities Commission of Illinois an application for a reduction in the carload rating on rubber footwear for movement between points in the State of Illinois or points governed by the Illinois state classification.

The present classification provides for first class on this commodity in any quantity and the application asks for a reduction in carload rates to second class minimum carload weight twenty thousand pounds, the same as applicable in intrastate movements.

Election of Members

The following new members of the association have been elected during the last few weeks:

Firm: Achilles Rubber & Tire Company, Binghamton, N. Y.; Ames Holden Tire Company, Montreal, Quebec, Canada; Rotary Tire & Rubber Company, Zanesville, Ohio; Universal Tire & Rubber Company, San Francisco, Cal; Duffy & Sears, 133 Front street, New York City; Thornett & Fehr, Inc., 66 Broadway, New York City; Syracuse Rubber Company, Inc., Syracuse, N. Y.; Trent Rubber Company, Trenton, N. J.; Hardy & MacArthur, 82 Beaver street, New York City; Parker Tire & Rubber Company, Indianapolis, Ind.; the Goodyear Tire & Rubber Company of Canada, Toronto, Ontario, Canada; the Goodyear Tire & Rubber Company of California, Los Angeles, Cal.; Eugene F. Phillips Electrical Works, Ltd., Montreal, Canada; Northern Electric Co., Ltd., Montreal, Quebec, Canada, and K. & S. Tire & Rubber Goods, Ltd., Toronto, Ontario, Canada.

Affiliated: R. T. Vanderbilt Company, 50 East 42nd street, New York City; Emery Manufacturing Company, Bradford, Pa.; Binney & Smith Company, 81 Fulton street, New York City; Osborn Engineering Company, Cleveland, Ohio; United Shoe Machinery Corporation, 205 Lincoln street, Boston, Mass.

Associate: George W. Charles, 57 Trafalgar avenue, Montreal, Quebec, Canada; William F. Enright, 190 Broadway, New York City; Harry J. Haefelein, 298 West Lena avenue, Freeport, L. I.; Frank A. Connor, 208 Lincoln street, Boston, Mass.; K. Dolbeer Smith, 210 McLennan avenue, Syracuse, N. Y.; Herbert L. Baxter, Hood Rubber Company, Watertown, Mass.; Robert L. Tonner, Hood Rubber Company, Watertown, Mass.; Robert Muir, Hood Rubber Company, Watertown, Mass.; Robert S. Quinby, Hood Rubber Company, Watertown, Mass.; Edmund S. Kochersperger, Hood Rubber Company, Watertown, Mass.; W. B. Wiegand, Ames Holden Tire Company, Montreal, Quebec, Canada; Claude M. Butler, Syracuse Rubber Company, Syracuse, N. Y., and William E. Greer, Syracuse Rubber Company, Syracuse, N. Y.

Standing Committees for Year 1920-1921

The Executive Committee has appointed standing committees to serve for the year 1920-1921, as follows:

Nominating Committee: Bertram G. Work, B. F. Goodrich Company; Harvey S. Firestone, Firestone Tire & Rubber Company; George B. Hodgman, Hodgman Rubber Company; Frederic C. Hood, Hood Rubber Company; Henry C. Pearson, India Rubber Publishing Company.

Legislative Committee: Charles Neave, chairman, general counsel of the Rubber Association of America, Inc.; F. C. Van Cleef, B. F. Goodrich Company; Ernest Hopkinson, United States Rubber Company.

Auditing Committee: F. A. Seaman, Kelly-Springfield Tire Company; W. J. Kelly, Poel & Kelly.

Outing Committee: A. H. Brown, chairman, Meyer & Brown; G. A. Ludington, Fisk Rubber Company; W. O'Neil, General Tire & Rubber Company.

Arbitration Committee (terms expire 1923): A. B. Jones, B. F. Goodrich Company; J. T. Johnstone, J. T. Johnstone Company; W. T. Baird, Rubber Trading Company; Homer E. Sawyer, ex-officio. (Terms expire 1922): Horace DeLisser, chairman, Ajax Rubber Co., Inc.; Andrew H. Brown, Meyer & Brown. (Terms expire 1921): George A. Ludington, Fisk Rubber Company; Van H. Cartmell, Kelly-Springfield Tire Company.

Banquet Committee: Horace DeLisser, chairman, Ajax Rubber Co., Inc.; A. W. Warren, Hodgman Rubber Company; C. W. McLaughlin, Mohawk Rubber Company.

Special Committee on Uniform Crude Rubber Contract and Nomenclature: Col. H. Stuart Hotchkiss, chairman, U. S. Rubber Plantations, Inc.; William E. Bruyn, L. Littlejohn & Co., Inc.; George B. Hodgman, Hodgman Rubber Company; Frederic C. Hood, Hood Rubber Company; William J. Kelly, Poel & Kelly; Paul W. Litchfield, the Goodyear Tire & Rubber Co.; Charles T. Wilson, Charles T. Wilson Co., Inc.; Homer E. Sawyer, ex-officio, United States Rubber Co.

Committee on Rubber and Kindred Products: Charles T. Wilson, Charles T. Wilson Co., Inc.; George B. Hodgman, Hodgman Rubber Company; Homer E. Sawyer, United States Rubber Company; Bertram G. Work, B. F. Goodrich Company; Col. H. Stuart Hotchkiss, United States Rubber Plantations, Inc.; W. J. Kelly, Poel & Kelly; E. H. Huxley, United States Rubber Export Co., Ltd.; E. H. Broadwell, Fisk Rubber Company; William E. Bruyn, L. Littlejohn & Co., Inc.

Special Joint Excise Tax Committee: Charles Neave, chairman; Kennedy M. Thompson, United States Rubber Company; F. C. Van Cleef, B. F. Goodrich Company; Bernard M. Robinson, Firestone Tire & Rubber Company; C. L. Landon, Goodyear Tire & Rubber Company; W. B. Stratton, Fisk Rubber Company; J. C. Weston, Ajax Rubber Company, Inc.; F. I. Reynolds, Empire Tire & Rubber Corporation; A. A. Garthwaite, Lee Tire & Rubber Company; W. E. Fouse, General Tire and Rubber Company; E. S. Kochsperger, Hood Tire Company; Herbert H. Maas, Ajax Rubber Company, Inc.

Statistical Committee: R. S. Butler, chairman, United States Rubber Company; W. C. Arthur, B. F. Goodrich Company; E. M. Bogardus, Fisk Rubber Company.

Bergougnan Prices Advance

Announcement of a complete revision of prices to take effect March 1 has been made by the Bergougnan Rubber Corporation, of Trenton, N. J. Every tire manufactured by the company, both cord and fabric types, and ranging from 26 x 3 motorcycle tire to the 44 x 10 pneumatic for trucks, is affected by this upward revision. The adjustment involves a five per cent increase on each tire.

Goodyear Prices Advanced

The long-awaited advance in the price of automobile tires and tubes has apparently arrived and new prices were put into effect by many of the leading companies on Monday, March 8. Chief among these companies is the Goodyear Tire & Rubber Co., whose new lists appear below and which show an average advance of approximately 17½ per cent. on automobile tires, 15 per cent. on tubes and 20 per cent. on motorcycle tires.

The increased cost of labor and the big advance in the prices of raw materials, particularly of cotton fabric, are the causes attributed to the necessity for this advance generally claimed by the industry. Following are the prices on cord and fabric casings and tubes:

CORD AUTOMOBILE TIRES

		Casings		Tubes	
Size.	Style.	Rib Tread.	All-Weather Tread.	Regular.	Heavy Tourist.
30x3½	Clincher	$29.60	$31.15	$3.75	$4.50
32x3½	Straight Side	42.25	44.50	4.25	4.90
32x4	Straight Side	53.75	56.55	5.25	5.85
33x4	Straight Side	55.10	58.00	5.45	6.05
34x4	Straight Side	56.60	59.60	5.70	6.30
32x4½	Straight Side	60.50	63.70	...	7.35
33x4½	Straight Side	62.10	65.35	...	7.60
34x4½	S.S.&Q.D.Cl.	63.70	67.05	...	7.80
35x4½	Straight Side	65.30	68.75	...	8.05
36x4½	S.S.&Q.D.Cl.	66.85	70.35	...	8.45
33x5	Straight Side	75.60	79.55	...	9.05
35x5	S.S.&Q.D.Cl.	79.25	83.40	...	9.60
37x5	S.S.&Q.D.Cl.	83.05	87.40	...	10.05

FABRIC AUTOMOBILE TIRES

		Casings		Tubes	
Size.	Style.	Smooth Tread.	All-Weather Tread.	Regular.	Heavy Tourist.
30x3	Clincher	$17.75	$19.70	$3.15	$3.90
30x3½	Clincher	21.15	23.50	3.75	4.50
32x3½	Straight Side	25.20	28.00	4.25	4.90
31x4	Clincher	29.50	32.80	5.05	5.50
32x4	Straight Side	33.65	37.40	5.25	5.85
33x4	Straight Side	35.35	39.25	5.45	6.05
34x4	Straight Side	36.10	40.10	5.70	6.30
32x4½	Straight Side	45.00	50.00	...	7.35
33x4½	Straight Side	46.45	51.60	...	7.60
34x4½	Straight Side	47.95	53.25	...	7.80
35x4½	Straight Side	50.10	55.65	...	8.05
36x4½	Straight Side	....	56.50	...	8.45
33x5	Straight Side	....	61.65	...	9.05
35x5	Straight Side	58.80	65.35	...	9.60
37x5	Straight Side	....	69.25	...	10.05

Rubber School for Trenton

Trenton, N. J., the rubber metropolis of the east, will soon possess a system of education for those desirous of entering the rubber industry unless present plans come to naught. The Rubber Manufacturers' Association of Trenton has submitted a plan by means of which it intends to cooperate with the school of Industrial Arts and this has been favorably received by Mayor Donnelly of Trenton. Plans have also been submitted for an addition to the shop building of the School of Industrial Arts which will eventually house the Department of Rubber Technology.

On Friday evening, February 20, a committee of the Rubber Manufacturers Association of Trenton, consisting of John S. Broughton, president of the association; J. A. Lambert, of the Acme Rubber Company; C. E. Stokes, of the Home Rubber Company, and W. M. Milner, of the Bergougnan Rubber Corporation, met with the Committee on Instruction of the School of Industrial Arts, to discuss the relation of the school to the industry and to determine upon the steps to be taken in order to make the school of material assistance to the rubber industry.

The part played by the Municipal University of Akron, Ohio, an institution supported by Akron as the School of Industrial Arts is supported by Trenton, was discussed. The work of the Akron institution is developing the rubber industry of that city is well known and it was felt that the Trenton institution should be of equal value to the rubber industry of Trenton.

While nothing definite was settled upon, the general scheme of cooperation was that the Rubber Manufacturers Association of Trenton should equip a Department of Rubber Technology and employ a chemist to carry on investigations and give instruction to men and boys already actively employed in the rubber industry as well as to those who expect to be so employed. The cost of a completely equipped department would approximate $10,000, and a man of the character needed for instruction would command a yearly salary of $5,000. The School of Industrial Arts is organized to provide the necessary administration and is in a position to offer the elementary instruction in its classes in chemistry, mechanics, machine shop practice, etc., which would develop students for training as rubber experts.

It was stated that although there were no suitable rooms for the housing of such a department, there was, nevertheless, a space adjoining the shop building upon which an addition could be built for comparatively small amount. The plans which were submitted provide for an addition 36 ft. x 38 ft. consisting of two floors and basement.

At the rate per cubic foot of cost of shop building this addition would cost between $10,000 and $12,000, but there are existing a number of reasons by virtue of which the total cost would be considerably less.

The deliberations of the meeting were embodied in a letter which was submitted to Mayor Donnelly of Trenton, suggesting that he take up the proposed plan of cooperation with the City Commission. Mayor Donnelly presented the matter at a meeting of the commission on Friday afternoon, February 27. The matter was favorably received and the mayor was directed to confer with the committee of the Rubber Manufacturers Association of Trenton.

Benson, New York Fisk Manager

E. S. Benson, formerly of Detroit, has been appointed manager of the Fisk Rubber Company's branch at 1725 Broadway, New York. Until January of this year Mr. Benson was associated with the Ajax Rubber Company as district manager at Detroit. Since then he has been connected with the Fisk Rubber Company, taking up his new duties at New York on March 1.

Mr. Benson's experience in the tire business is one of long standing. Before becoming affiliated with the Ajax Company, he represented the United States Tire Company in its Eastern district. He also was with the Hartford Rubber Works Company and the G. & J. Tire Company for a considerable length of time, acting both in sales and executive capacities. Mr. Benson is well known among the trade of New York City.

Tozier Resigns from Century

E. B. Tozier has resigned as secretary and general manager of the Century Rubber works, Chicago, Ill. No notice of his plans has been given, save that his address will be 1307 Rector Building, Chicago, Ill.

Braender Advances Prices

The Braender Rubber and Tire Company, of Rutherford, N. J., announces that owing to the increase in cost of labor and materials it has been obliged to advance its price on tires and tubes. The revised prices are as follows

FABRIC POPULAR SIZES

			Tubes.	
	Plain.	Non-skid.	Gray.	Red.
28 x 3	M. C.	$18.00	$3.10	$3.85
29 x 3½	M. C.	23.10	3.70	4.45
30 x 3	$15.75	18.40	3.20	3.90
30 x 3½	20.50	23.30	3.75	4.50
30 x 3½ Giant molded	5-ply	34.00	5.05	5.55
31 x 4	31.30	36.45	5.05	5.55
32 x 3½	23.75	27.20	4.30	4.90
32 x 4	32.00	37.10	5.30	5.90
33 x 4	33.45	38.85	5.50	6.05
34 x 4	34.30	39.75	5.70	6.40
32 x 4½	43.40	49.55	6.70	7.35
33 x 4½	44.70	51.10	6.90	7.65
34 x 4½	44.15	52.75	7.05	7.85
35 x 4½	48.30	55.15	7.10	8.10
36 x 4½	48.95	55.95	7.45	8.45
33 x 5	51.90	61.05	8.25	9.10
35 x 5	55.05	64.75	8.60	9.65
37 x 5	66.55	68.55	8.95	10.10

FABRIC MADE TO ORDER SIZES

31 x 3½	21.55	25.05	3.90	4.75
34 x 3½	30.00	30.85	4.50	5.25
35 x 4	38.60	41.50	5.95	6.75
36 x 4	39.80	42.15	6.05	7.15
37 x 4½	54.00	58.45	7.80	8.90
36 x 5	61.00	65.75	8.80	9.90

CORD PRICE LIST

30 x 3½	....	42.75	5.05	5.55
32 x 3½	....	46.15	5.50	6.05
32 x 4	....	59.80	6.90	7.65
33 x 4	....	60.15	7.05	7.85
34 x 4	....	61.80	7.10	8.10
32 x 4½	....	66.00	8.25	9.10
33 x 4½	....	67.75	8.45	9.35
34 x 4½	....	69.60	8.60	9.65
35 x 4½	....	71.40	8.80	9.90
36 x 4½	....	72.95	8.95	10.10
33 x 5	....	82.45	10.30	11.40
35 x 5	....	86.45	10.75	12.05
37 x 5	....	90.40	11.20	12.65

Mid-West Association Meets

The February meeting of the Mid-West Rubber Manufacturers Association was held at the Chicago Automobile Club on February 11, and was one of the largest and most enthusiastic that has been held by this Association since its organization a year ago.

The new president, John T. Christie, of the Hawkeye Tire and Rubber Co. of Des Moines, Iowa, was in the chair, and introduced the new general manager, H. S. Vorhis, formerly of the Rubber Association of America, and more recently of the Gutta-Percha and Rubber Manufacturing Company of 126 Duane Street, New York. Mr. Vorhis in a brief address outlined some of his plans for the development of an aggressive and helpful rubber association in the Middle West, and bespoke the co-operation of the entire membership to this end.

President John T. Christie then called upon a number of those present for brief remarks, among whom Mr. A. W. Caney, of the Achilles Rubber and Tire Co., of Binghamton, N. Y., brought greetings from the Eastern contingent of the membership. W. E. Byles, the crude rubber broker of New York spoke in an interesting manner of the proposed new Crude Rubber Exchange in New York.

The following new members were elected: Black Hawk Tire and Rubber Co., Des Moines, Iowa; Surety Tire and Rubber Co., St. Louis, Mo.; W. E. Byles, Crude Rubber Broker, 140 Pearl St., New York, N. Y.; Duffy and Sears, Crude Rubber Brokers, 133 Front St., New York, N. Y.

It was decided that in the future the meetings of the association will be held on the second Tuesday of each month. Ordinarily the meetings are held at the Chicago Athletic Association.

News from the Trade at Large

Syracuse Rubber to Enlarge—Dixie Rubber to Build Plant—Ideal Tire and Rubber to Increase Production—Standard Four Tire Plans Large Increase

Syracuse to Enlarge

"Genius has been exceptionally kind to the present day automobile owner," says Louis Luckoff, of the advertising department of the Syracuse Rubber Company, Inc. "It was not so very long ago we were cranking our automobiles with hand cranks, lighting our automobile lamps with matches, and were tooting rubber hand horns. It was not so very long ago we were riding on tires that gave a mile-

C. R. Loggie

age which would seem ridiculously low in these days when most motorists are equipping their cars with cords.

"We were somewhat skeptical when cord tires were first introduced, but they gradually gained in popularity as they piled up greater and greater mileage records. If you had noticed the tires on the cars at the automobile shows this year, you would have seen that practically all manufacturers are equipping their cars with cord tires. Car manufacturers realize that cord tires not only give much greater mileage, but they cushion the mechanism and prolong the newness and long life of the car itself. Rubber men predict that within from two to four years the only automobile tires made will be cord tires.

"It was but following the trend of the times when the Syracuse Rubber Company, Inc., planned its factory at Syracuse, N. Y., to build only cord tires. The factory, the first unit of which has recently been completed, is a modern, daylight factory, equipped with only the most modern cord tire machinery.

"It was G. R. Loggie, president of the company, who first advanced the idea of specializing in making only cord tires. The company was organized over a year ago and raw materials were purchased as long ago as last spring. W. E. Greer, a man of long experience in cord tire building, was secured as factory manager, and the tire centers of the country were combed for the best cord tire builders who could be obtained.

"Mr. Loggie's idea in locating in Syracuse, N. Y., was to be near the purchasing points of raw materials, yet be so located as to have ideal freight and express conditions to every distributing center in the country. The factory is now in production and it is expected that the second unit of the factory will be started in the near future."

Dixie Rubber to Build

Ground will be broken on April 2 for the construction of the $1,000,000 plant of the Dixie Rubber Company at South Parkway and the Frisco Railroad, Memphis, Tenn., according to announcement made recently by L. C. Cadenhead, vice-president and general manager of the company. Mr. Cadenhead said that the contract for the erection of the factory building was awarded recently to Carlisle and Gaines, Memphis architects, and that plans for beginning the work of construction are now well under way.

In addition to the plant for the manufacture of automobile tires and inner tubes, as well as other rubber goods, the company plans the erection of a plant for the manufacture of the fabrics used in the tires. The fabric mill will be located adjacent to the rubber plant and will be equipped with the latest models of machinery. Mr. Cadenhead said that the company is now negotiating for the purchase of 1,000 acres of land upon which it proposes to grow long staple cotton to be used in the manufacture of fabrics.

Ideal to Increase Production

The Ideal Tire and Rubber Company of Cleveland, Ohio, will complete the new addition to the original plant about June 1, and the company will then be in a position to increase its capacity 100 per cent.

At the directors' meeting February 10 payment was authorized on accumulated dividends, accrued between October 1, 1917, and April 1, 1918, on preferred stock issued to April 1, 1918. Payment of this dividend will be made March 15 to owners of these certificates on record on the company's books February 15.

This is the second dividend declared within thirty days and, judging by present progress and earnings, dividends soon will be on a quarterly basis and the preferred stock dividends will be paid up in a very short time.

New Labor Saving Devices

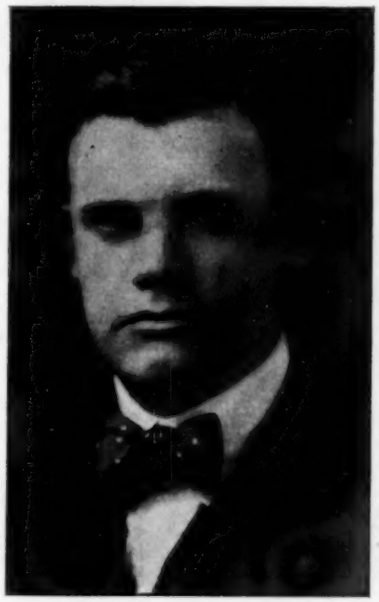
The Latex Tire and Rubber Company are installing at their new plant at Fond du Lac, Wis., a number of labor-saving devices for the rapid handling of tires which are designed especially for this company by Grant Lambright, the general superintendent. A system of cranes and tables different from that in use in other tire plants giving one-third more speed in handling tires has been worked out by Mr. Lambright, as the result of his thirty-two years' experience in the industry.

It is the belief of the Latex superintendent that his new plan will result in materially cutting the cost of production to a lower point than has previously been obtained by other manufacturers.

Standard Four to Increase

More than 100 per cent increase in production will take place in the factory of the Standard Four Tire Co. at Keokuk, Iowa, just as soon as additional equipment can be installed, according to F. R. Eyers, general sales manager of that institution. Mr. Eyers was recently in Akron in an effort to hurry up delivery of the equipment which has been on order some time. He returned with the information that shipment would be made within a few days.

"While the company has never aspired to big production," said Mr. Eyers the other day, "we find that our present output of about 450 tires a day is wholly inadequate for filling our requirements. We are going to bring that production up to a thousand tires and a thousand tubes



W. E. Greer

daily, just as quickly as the necessary equipment can be set up.

"The last six months have set new records in every way for the Standard Four Tire Co., and we feel that this is largely due to the quality of the tire we are turning out. That quality can be verified by the fact that out of 50,000 tires sold during 1919 there were only 263 adjustments—considerably less than one per cent. With the addition of new equipment and increased factory space we will be able to enlarge our distribution.

"One of the features of the Standard Four policy that is very popular with the trade is the fact that we are in position to furnish new distributors and jobbers, who order in large quantities, with a direct factory representative who will assist them in establishing dealers.

"Then, too, the Standard Four distributor never need worry about his business being supplanted by a direct factory branch as long as he keeps up his own quota of business. We want every one of our distributors to feel that he is a permanent part of the home organization. For that reason we aren't going to invade his territory with a branch."

For the benefit of its distributors, however, two important factory warehouses have been established—one in Los Angeles for the advancement of the Far West trade, and another in Indianapolis, which has been made a large distribution center for Standard Four tires.

Delion Tire Changes Hands

The Delion Tire and Rubber Company, of Trenton, New Jersey, has sold its entire business, name, good-will, trademarks and certain other properties to Walter C. Price and associates, of Baltimore, Maryland, who have reorganized the company, obtaining a charter under the laws of the State of Maryland, with the same name, with an authorized capital of $1,500,000.

Walter C. Price was formerly president of the Price Hardware Company, wholesale hardware merchants at Pulaski, Va. He is the new president of the Delion Tire and Rubber Company, with offices located at 131 West Mount Royal Avenue, Baltimore, Md.

The company will erect a modern, up-to-date factory in Baltimore, with an initial capacity of four hundred tires per twenty-four hour day, and will manufacture the highest quality of fabric and cord tires and tubes.

The Delion Tire and Rubber Company has been conducting a tire manufacturing business since February 1, 1915, at Trenton, N. J.

Altenburg Tire Enlarges

The Altenburg Tire and Rubber Co., of Davenport, Iowa, will in the near future erect a new factory building, adding 200,000 feet of floor space to their present capacity, it was announced by members of the firm recently. The factory will be erected near their present building on East River Street.

Manufacture at the Davenport plant of a new tire invented and patented by E. P. Altenburg will make necessary the addition to the plant. The company will have 250,000 square feet of floor space when the new building is completed.

When the necessary improvements are made at the plant over 500 expert tire men will be employed by the concern. The output of the factory will be gradually increased and within the next few years it is planned to double the floor space to 500,000 square feet.

Tire Demand Estimated

The peak demand for tires in the United States will be 80,000,000 tires a year for pleasure and motor trucks, and the present tire output of the country is approximately 45,000,000, according to statistics compiled by the Akron Chamber of Commerce and made public on February 13.

At the end of the present year at least 57,000,000 tires will be required a year, the report states. This estimate is based upon conservative figures furnished by automobile manufacturers which indicate that during the present year of 1,600,000 pleasure automobiles and between 375,000 and 450,000 trucks will be produced and placed in service, it was said.

These figures, the report states, indicate that Akron, the city where more than 50 per cent of the tires of the world are manufactured, will continue to grow with the automobile industry.

If for some unforseen reason the growth of the automobile and tire industries are abruptly terminated and the factories in Akron do not expand, the city will continue to grow for at least three years, the report said.

The ratio of the industrial employes to the total population is much higher in Akron than in other cities because a large number of men have come to Akron to work who have been unable to bring their families with them because of a shortage of houses.

Oldfield Warehouse in Seattle

Barney Oldfield, the veteran automobile racer who made racing history in America for years, was in Seattle, Wash., for a short visit recently for the purpose of looking over the field and finding out if business was such that the Oldfield Tire Company, of which he is the president, would be justified in building a warehouse here for the Northwest distribution of Oldfield tires.

And because Bruce R. Deaton, president of the Deaton Tire Company, Oldfield tires distributor, and members of the Seattle Chamber of Commerce showed Mr. Oldfield that there was plenty of business in Seattle for his product, Oldfield decided that the warehouse should be located in Seattle and not at Portland as he had planned.

The location of the warehouse in Seattle will mean that Northwest Oldfield tire dealers need not send to the Eastern factory or to San Francisco for them. It will also mean that orders for unusual sizes can be filled at once. Bruce Deaton of the Deaton Tire Company is decidedly pleased with Mr. Oldfield's decision as he says it will increase the already large demand for Oldfield tires.

Barney Oldfield went into the tire manufacturing business when he quit the racing game. As the veteran racer had learned through actual experience just what tires must do and must be made of, he went into the manufacturing of them with knowledge that has proved invaluable to him. The Oldfield tires have already an enviable reputation and are steadily growing in popularity.

New Offices for Madison

Announcement has been made by the Madison Tire and Rubber Company, Inc., that on May 1, it will move from its present quarters at 254 West Fifty-seventh Street, New York, to its own building at 20 West Sixtieth Street, which is to be used only as temporary quarters until a much larger building can be erected on the main thoroughfare.

In addition to the foregoing announcement, it is stated that the firm has purchased a three story building at 85 Boyston Street, Boston, Mass., which is to be used as the New England headquarters of the firm. Arrangements are now under way to open branch offices in Chicago and Philadelphia and in all probability there will be warehouses in each of these localities.

The following experienced tire salesmen have been added to the Madison force: H. Cassel, J. H. Connor, J. M. Erickson, E. C. Handy, J. H. Jones, Jr.; C. A. Raymond, F. B. Reese, J. A. Riley, G. Shortmeier, C. H. Smelzer, D. I. Tilton and S. E. Well. At the present time the firm has secured 170 dealers for Madison tires and has made several European and South American connections.

Mid-Continent Expands

With the quick marketing of recent stock issue made in December, January and February the Mid-Continent Tire Mfg. Co., Wichita, Kansas, is laying plans for an immediate advertising campaign and has already doubled its cord tire output. This tire is black—a universal tread branded with the "Midco" seal in gold. R. F. Rowe, general sales manager, states that the firm is supplied with raw materials. The firm will erect additional reinforced concrete buildings in the early spring for increased demands on their products.

Lambert Doubles Production

With the news of more than doubled production in the factory of the Lambert Tire and Rubber Co., of Barberton, Ohio, comes the announcement of several important changes in the organization.

Obviously, H. H. Lambert, inventor of the Lambert Trouble Proof Cord Tire, has been re-elected president; Judge Arthur Langwith, who has large shipbuilding interests in the North West, is vice-president and chairman of the board of directors; N. W. Coyle is vice-president, a director, and chairman of the Finance Committee; Porter E. Ramsey, for many years a prominent executive in the plant organization of The Western Union Telegraph Co., is a new director and general superintendent of the factory.

J. H. Hausan has been re-elected secretary and treasurer and he also temporarily replaces General Manager G. K. Fargo, who has taken over the Southern California distribution of the product. R. S. Teagle, formerly with the Biltwell Tire and Rubber Co., succeeds L. F. Neinaber as factory superintendent. The latter has taken charge of the Minnesota distribution of Lambert tires.

Chattanooga Tire Plant

Chattanooga is to have a big automobile tire plant. A charter for the DuBois Tube and Rubber Company, capitalized at $100,000, with the privilege of increasing it to $200,000 was filed recently. The incorporators are L. H. Lightfoot, M. N. Whitaker, J. L. Foust, Phil Whitaker and A. J. Smith. L. H. Lightfoot is responsible for bringing the concern to Chattanooga, as the promoter, or rather the inventor of the tire to be manufactured was about to locate in Nashville. J. D. DuBois is a resident of Nashville. He thinks he has invented just about the best tire on the market. It is non-puncturing. The patent is on a compressed inner tube, which makes a puncture absolutely harmless.

Goodrich Warehouse in Pittsburgh

W H. Moore, district manager of the B F. Goodrich Rubber Company, has announced the consummation of negotiations whereby a new warehouse has been selected at the Shadyside Station, Pittsburgh, Pa. The occupation has already been made and shipments are going on daily in proportions never before attained in the history of the local branch.

The announcement of the completion of the arrangements means the fourth big stride that the Goodrich Company has taken in Pittsburgh to keep facilities commensurate with the production and sales.

The first combination warehouse and office was located at Penn and Beatty avenues, but the business soon outgrew its infancy and the sudden expansion made it necessary to occupy the present quarters at 414 North Craig street. Here again relief was only temporary. The tremendous expansion during the last two years has made it necessary to treble the operating and shipping staff, with the result that again a new warehouse became necessary To provide space for the operating force, plans are under way to triple the size of the present office.

Surety Tire Expands

The Surety Tire and Tube Co., St Louis, Mo., is making considerable expansion with respect to plant and equipment. William L. Burgess, vice-president and general manager, states that next year the firm will produce 5,000 tires and a similar number of tubes daily.

Many Increases in Capital Recorded

Mason Tire Reorganizes—Miller Increases Capital—Gillette Issues New Stock—United States Large Earnings—Kelly Business for 1919—Climax Rubber Increases—McGraw Declares Dividend

Mason Tire Reorganizes

At special meetings of the board of directors of the Mason Tire and Rubber Company and the Mason Cotton Fabrics Company, held in Cleveland, an agreement was reached between the two boards covering the re-organization of the Mason Tire and Rubber Company and the absorption by it of the Mason Cotton Fabrics Company, all of which is subject to ratification by the stockholders of the two companies, at a special stockholders' meeting called for March 31, at Kent, Ohio.

The capitalization of the Mason Tire and Rubber Company is to be increased from $5,000,000 to $10,000,000, all of which will be seven per cent cumulative preferred stock, and its present common stock capitalization, consisting of one hundred thousand shares of $10 par series "A" stock will be changed to one hundred thousand shares of series "A" no par stock, and its present one hundred and fifty thousand shares of $10 par series "B" common stock will be changed to one hundred and fifty thousand shares of series "B" no par stock, the only difference between series "A" and series "B" common stock being that series "A" is voting and series "B" is non-voting.

Stockholders of the Fabric Company, upon approving the consolidation, will receive one share of the Mason Tire and Rubber Company's preferred stock for each share of present Fabric Company preferred stock (par $100), plus cash equaling accrued dividend from date of issuance, payable April 1. Fabric Company stockholders will receive one share of the Mason Tire and Rubber Company's no par series "B" stock for each two shares of Fabric Company stock they now hold. Holders of the present common stock of the Mason Tire and Rubber Company will exchange their common stock, share for share, for the new no par stock of the series of that which they now own.

The combined balance sheet as of April 1st, the date of consolidation, will show between $9,000,000 and $10,000,000, of which in excess of $5,000,000 will be working capital, with no current liabilities whatever.

Mason Cotton Fabrics Mill

The Mason Cotton Fabrics Company's mill is the first complete tire fabric mill in the Akron district, having 125,000 square feet of floor space—10,000 spindles—and it will go into operation in about three weeks. It is built of concrete and steel, electrically driven throughout, with a capacity that will produce forty thousand pounds of fabric per week, all of which fabric will be consumed by the Mason Tire and Rubber Company. Through this consolidation, the Mason Tire and Rubber Company will acquire control of 100 per cent of its fabric requirements, and will become the only tire factory in the United States owning, outright, the production of 100 per cent of its main raw material, viz: tire fabric. The securing of fabric is the one thing that has worried tire manufacturers during the last year. Rubber is now below pre-war prices, and has consistently held below pre-war figures since the close of the war, but fabric has gone from $1.00 a pound to $3.00 per pound; and great quantities of it cannot be secured at any price.

One of the main reasons for the advance in tire fabric has been the fact that very few mills are equipped to take the baled cotton and turn it into tire fabric. A great many have only weaving units, being forced to buy yarn from the spinners. Tire fabric yarns have recently sold for $2.25 a pound, and fabric weavers have had to buy yarn at this price, and their cost of weaving, and go still further and add their profit. The Mason mill at Kent, which will become the Textile Division of the Mason Tire and Rubber Company, has complete spinning and weaving units, evenly balanced, and will take the baled cotton, clean and refine it, spin it into yarn and then take the yarn and weave it into fabric. The mill in full operation will employ about four hundred people.

The Mason Tire and Rubber Company now operates twenty direct factory branches in the United States, and has about forty foreign connections which are handled through its export department in New York City.

Sales should be at the rate of $12,000,000 annually before the close of the present fiscal year, October 31, which will mark the closing of the fourth fiscal year of the company.

Miller Increases Capital

The capital of The Miller Rubber Company was increased from $20,000,000 to $60,000,000 at a special meeting of stockholders, February 12, $20,000,000 of this will be common stock; $40,000,000 will be 8 per cent preferred stock.

The sale of $10,000,000 of the new preferred stock and retirement of $3,155,500 of the first preferred and $2,000,000 of second preferred stocks outstanding was also authorized by the stockholders without a dissenting vote.

R. T. Griffiths, general superintendent, and F. C. Millhoff, general sales manager, were elected to the board of directors together with the old directors, Jacob Pfeiffer, Wm. F. Pfeiffer, C. T. Grant, J. M. Doran, and F. B. Theiss.

Jacob Pfeiffer, president; C. T. Grant, vice-president; Wm. F. Pfeiffer, secretary-treasurer and general manager; and Charles R. Wetsel, assistant secretary; were reelected as officers.

The gross sales for 1919 were $26,495,482. The profits before providing for federal taxes and contingencies were $2,193,547.50, showing an increase in sales of 60 per cent over 1918.

"Geared-to-the-Road" cord tires, comprised more than half of the tire sales.

A large block of the new 8 per cent preferred stock has been reserved for employes to be sold to them on terms, and will be opened as soon as plans are made according to an announcement made by Wm. F. Pfeiffer, general manager.

Gillette Issue New Stock

The Gillete Rubber Co., of Eau Claire, Wis., in order to provide for greater production, has placed upon the market $750,000 in seven per cent cumulative preferred stock. The company is at present producing 1,000 tires and 200 raincoats daily and it is planned upon the completion of additions to the plant to increase this output to 1,500 tires and 300 raincoats per day.

United States Large Earnings

United States Rubber Company earned $16,629,159 after all charges, including federal taxes, in the nine months ended September 30, 1919, or about $18 a share on $72,000,000 common stock after preferred dividends. This is approximately $550,000 more than the net profits of the year 1918, which amounted to $16,072,041 after charges and taxes. For the full twelve months of 1919 net profits after all charges and taxes should approximate $23,500,000. Deducting preferred dividend requirements, the balance would be equal to about $26 a share on $72,000,000 common stock, compared with $30.81 a share earned on $36,000,000 common stock in 1918.

Total sales for the nine months ended September 30, 1919, amounted to $158,388,094. This represents an increase of about $60,000,000 over sales for the first six months, which were $99,489,372. It is estimated that sales in the last quarter of 1919 increased in about the same ratio as in the previous quarter. On that basis total sales for the full twelve months should have been in the neighborhood of $230,000,000.

Kelly Business for 1919

The Kelly Springfield Tire Company in its pamphlet report for last year shows gross profits of $7,034,284, as compared with a gross of $7,187,834 in the preceding year. After deducting administration expenses and appropriating $814,275 for estimated excess profits taxes the balance available for dividends was $2,422,522. This was the equivalent after preferred disbursements to approximately $39 a share on the $5,361,978 common stock outstanding at the close of the year. In the preceding year the earnings were $1,707,735 after the payment of $2,657,492 for income and excess profits taxes. After deduction of preferred dividends the amount available for the common was equal to about $34 a share on the $4,907,200 common then outstanding.

Current assets total $12,225,647 and current liabilities of $690,197.

Climax Rubber Increases

The Climax Rubber Company's capital stock has been increased from $300,000 to $1,500,000. The first building to be erected on the new site in West Goodale Street, Columbus, Ohio, will be three stories and basement, steel and reinforced concrete. This will provide facilities for making 1,000 tires and 2,500 tubes a day. Offices of the company are in the Citizens Bank Building. Irving S. Hoffman is president; Herman A. Longshore, vice-president; March E. Swanson, secretary and treasury; Clyde B. Turner, assistant secretary and treasurer. These and the following are directors: U. S. Brandt, Columbus; Joel C. Clore, Cincinnati; Roger Selby and James W. Bannon, Portsmouth; G. E. Shindle, Hunting.

McGraw Declares Dividend

At their meeting on Friday, February 20, the board of directors of the McGraw Tire and Rubber Company provided for the payment of the usual quarterly dividend.

The dividend is seventy-five cents per share on the outstanding no par common stock and is due and payable March 1, 1920, to the stockholders of record as shown by the books of the company at the close of business on February 20.

News From The Rubber Metropolis

Cotton Prices to Remain High—American Tire and Rubber Increases Capital—Goodyear Tire and Rubber Sells Dirigible Ballon

Cotton to Remain High

Cotton prices must stay at present high levels while the world-wide abnormal demand continues, says a special report on "Cotton Economics," by W. W. Morrison of New Orleans, just released by the American Cotton Association. The New Orleans dispatch, which goes into the situation in detail, follows:

"During last year there was much comment on the amount of cotton that would be carried over. Its significance was frequently emphasized by pointing out that this surplus had accumulated in the face of five short crops that had followed each other in succession. Many conservative people even, were disposed to regard it as a menace to those who held spot cotton and to those who bought future contracts.

"The people most vitally concerned, however, did not share in these views. On the contrary spinners in Europe and in America throughout last year, and for a much longer time, continued to grow increasingly restive over the outlook for a supply of raw cotton. The feeling was general that when the world began to return to normal conditions and the world's normal needs began to press on the supply, the spinning industry would be theatened with disaster, unless the output of cotton was increased well above what had been its trend for a good many years. In fact, it was felt that this trend would have culminated in a disaster by this time had it not been for the abnormal economy enforced by the war.

"They have been holding meetings in England to consider the situation. Committees, official and otherwise, have been appointed to find what could be done towards securing a sustained increase in the world's cotton crops. Many plans have been proposed, among them growing cotton in countries other than America. This is an old story however. The consensus now is that relief from that source is remote, if, indeed, it can be expected at all. It is generally conceded that the South is the only source from which relief can be expected in the near future and, probably, it is the only source that can be permanently depended on. Consequently how to increase the cotton crops of this country has engaged, and continues to engage, some of the best thought of the spinners of the world, especially of England.

"Now, the fact is, the production of cotton has been unsatisfactory to cotton labor in this country for a long time. This has resulted in a steady movement of labor away from the cotton farms. Even the higher prices of recent years have not arrested this movement. This means that it will take a higher price than any yet realized to hold labor to cotton production. All of these things are plain to practical students in the South. They seem, however, to have entirely escaped the spinners in Europe and in this country, especially the spinners of New England. Hence, we have the extraordinary spectacle, of those who are vitally interested in the supply being increased persistently trying to bring about lower prices, at the same time the people upon whom they must depend for this increase were steadily abandoning production because the price was not high enough.

"The cause of this is not difficult to trace. These spinners have been misled by their friends conspicuously among whom have been some brokers and editors in England and America. For instance, some years ago, when prices were between sixteen and eighteen cents, it was claimed by an editor that cotton was selling at 200 per cent profit. Without a vestige of evidence being submitted to support this claim it was made the basis for a brutal attack upon the cotton growers. The claim was repeated, in one form or another, practically all over the cotton world It led many spinners and many other people to believe there were enormous profits in growing cotton. This belief has persisted in face of the fact that labor has continued to steadily abandon its production as prices have gone higher.

"Southern farmers are now producing products, other than cotton, five times the value of the cotton crop. This has been, and will continue to be, a tremendous factor in shaping the world's supply of cotton. These products have brought the farmers better homes, better clothing and less hours of grinding toil than the production of cotton ever did or promises to do, even at much higher prices than any that have so far prevailed. There is not sufficient labor in the South to produce these other crops and to produce, in addition, all the cotton the world needs. What answer is the great spinning industry prepared to make to the questions which these facts pose? Will they continue to be misled by these editors and brokers who have been, and continue to be, the protagonists of the low cost of production?

"This situation cannot be liquidated by injecting false issues into it, like threats of embargoes and reshipments, and by promoting a propaganda wholly misleading as to the cost of production. More cotton for the world must mean more money for the growers. That is an inexorable condition.

American Rubber Increases Capital

(Special Akron Correspondence)

An increase in capital from $675,000 to $4,000,000 has been approved by the stockholders of the American Tire and Rubber Co. to take care of the greatly increased business. Of the new capital stock, one-half will be common and one-half first preferred eight per cent. cumulative.

Directors reported an increase in net sales of 128 per cent. over the previous year, and told stockholders that the balance sheet showed a very satisfactory net profit. Sales of the company, it was said, are now running at the rate of $5,000,000 annually and the plant is working full three eight-hour shifts.

During the past year the company has erected a five-story factory building, an administration building, as well as completed a hydro-electric plant.

The entire board of directors and officers were re-elected. Fred. H. Snyder is president; J. W. Rook, vice-president; Henry L. Houk, secretary and treasurer. Wade K. Gardner was advanced to the position of assistant-treasurer and Ben H. Allen to that of assistant-secretary.

Goodyear Sells Dirigible

(Special Akron Correspondence)

Rapid development of the balloon department of the Goodyear Tire and Rubber Co. on a peacetime basis is forecast in the recent announcements of the first sales of blimp type dirigibles for commercial purposes.

The first of these sales was made to the Commercial Airship Syndicate, of Kansas City, Mo., for delivery March 16. The aircraft purchased is of the type known to the trade as a "pony blimp." It seats two passengers, the bag has a gas capacity of 35,000 cubic feet with length of 95 feet, height of 40 feet and envelope diameter of 28 feet. The ship is of the "pusher" type, motored by a 40-horsepower 16 valve four cylinder engine that had driven it at a speed of 40 miles an hour in trials. At a cruising speed the ship's range is more than 400 miles. Its "ceiling" is about 6,000 feet.

Although designed primarily for sportsmen, the pony blimp, because of its small size and exceptional maneuverability, is expected to have wide use for aerial mail transportation, express carrying, aerial photography and map making over country difficult to traverse, wheat and oil field survey, coast guard, harbor and forest patrol.

Jones Heads Republic Rubber

E. F. Jones, newly elected president of the Republic Rubber Corporation, of Youngstown, Ohio, brings to the company thirty years of practical experience in the manufacturing field. During that time he established a reputation not only as a capable executive and organizer, but as a business man of exceptional ability.

A striking example of his success is his achievement with the Morgan Spring Co., of Worcester, Mass., which made rapid strides ahead during the time he served as vice-president and general manager. For ten years Mr. Jones was identified in various responsible capacities with the Illinois Steel Company, then for a twelve-year period with the International Harvester Company, which he served in practically all departments, then with the Morgan Spring Company and National Manufacturing Company, next as president of the Clinton-Wright Wire Company, Worcester, Mass., and more recently as vice-president and general manager of the Elyria Iron & Steel Company, Cleveland, Ohio.

During his business experience he has come in touch with industrial and financial leaders in all parts of the country, and his acquisition is considered a most fortunate one by the interests behind the Republic Company. It is taken to mean the beginning of a new era in the history of the company.

Under management of the new executive, directors are confident of the future success of the company and predict a substantial growth in sales of the widely known line of Republic cord, fabric, and solid truck tires, and mechanical rubber goods.

Forster Issues New Stock

The Forster Tire and Rubber Company of Millersburg, Ohio, has recently put out a new issue of eight per cent cumulative preferred stock to the extent of $250,000. Par value is $10 a share, carrying a bonus of twenty per cent, par value, of common stock.

Personals of the Trade

Babcox with Akron Advertising Agency—India Rubber Elects—Sterling Officials Chosen—Premier Rubber Chooses Heads—New Officers for Amazon—Name Plant for Col. Colt

Babcox with Akron Agency

Edward S. Babcox, sales manager of the Rubber Products Company, of Barberton, Ohio, and one of the most widely known advertising men in the country, has resigned that position to accept the vice-presidency and a directorship in the Akron Advertising Agency Company, of Akron, Ohio. The resignation takes immediate effect.

As advertising manager of the Firestone Tire and Rubber Company for six years, which position he left a year ago, Mr. Babcox achieved a national reputation. For two terms he served as vice-president of the Association of National Advertisers and he also was president of the Audit Bureau of Circulations. While vice-president of the Association of National Advertisers, his duties included the chairmanship of several important committees, one of which was the War Advertising Committee. He had much to do with such tremendous government publicity campaigns as those dealing with the food situation, coal, enlistments, Liberty Bonds and so on.

Mr. Babcox's advertising experience dates back more than twelve years when he was a member of the advertising department of Yawman and Erbe, of Rochester, N. Y., manufacturers of office supplies. From Yawman and Erbe, he went to the Burroughs Adding Machine Company of Detroit, as assistant to E. St. Elmo Lewis, at that time the Burrough's advertising manager. A year or so later Yawman and Erbe called him back to Rochester as advertising manager and he remained there until 1913, when he took over the advertising managership of the Firestone Company. He served in this capacity six years, after which he accepted the sales managership of the Rubber Products Company.

The selection of Mr. Babcox for the important position he is taking with The Akron Advertising Agency Company is said to be but one of many steps that that concern is now taking in order to keep pace with a rapidly growing business. Although but a little more than a year old, its clients include many well known companies.

India Rubber Elects

The Board of Directors of the International India Rubber Corporation, at their recent meeting, after the receipt of the report of Bowers and Suffern, certified public accountants of New York City, together with the report of the American Appraisal Company, of Milwaukee, directed that the entire accumulated dividends on the outstanding preferred stock for the years 1917 and 1918 be paid in cash. The board of directors further declared the regular annual dividend of seven per cent in cash on the preferred stock for the year 1919 and directed that a cash distribution be made out of earnings equal to six per cent on the common stock. The officers elected for the ensuing year were, George W. Odell, president and treasurer; P. E. Studebaker, vice-president, and B. F. Wulff, secretary, with C. Truxell and J. W. Ridge additional directors.

Sterling Tire Officials Chosen

At a meeting of the board of directors of the Sterling Tire Corporation, held at its office in Rutherford, N. J., recently, A. A. Altschuler of Hackensack, N. J., was elected president to succeed Spencer Welton, resigned.

Mr. Altschuler has been a director of the corporation for several years and is also president of the International Fidelity Insurance Company and a director of the Union Trust Company of Jersey City.

Mr. Altschuler is an eminently successful business man of larger affairs, and

A. A. ALTSCHULER

the Sterling Tire Corporation is to be congratulated upon his more active interest in its operation.

Succeding Mr. Welton on the board of directors is Frank A. Ball, vice-president of the L. S. Starrett Manufacturing Company of Athol, Mass., largest makers of high grade machine tools in America.

Other officers remain the same as in past years: Vice-president and general factory manager, Otto Basten; treasurer, Joseph A. Miller; secretary, Bartlett Greene; chairman executive committee, Charles Austin Bates.

The Sterling Corporation has closed the most successful year in its history, having changed its selling policy from retail to wholesale and opened accounts with over five thousand dealers from Maine to California.

It has unfilled orders and contracts for 1920 delivery amounting to over two millions and a half of dollars.

The plant in East Rutherford has been materially enlarged during the year, and now has a capacity of 1,200 tires a day.

Further additions are planned to bring production to 2,000 tires per day before the end of 1920, which will mean the employment of double the number of people employed during 1919.

Premier Rubber Chooses Heads

Stockholders of the Premier Rubber and Insulation Company, of Dayton, Ohio, have increased the capital stock to take care of the large volume of business which it has on hand.

The company is specializing in the manufacture of hard and soft rubber goods, such as storage battery jars and covers, gaskets and Bakerlite products. It has recently secured some large contracts which will tax the capacity of the plant, making it necessary to operate on a full day and night basis.

The officers elected for the ensuing year are as follows: William Grether, president and treasurer; William F. Grieser, vice-president, and John H. Shively, secretary. These men, with Joseph Westendorf and Harry H. Gerstner, will comprise the board of directors for 1920. Henry Spatz, for many years with the United States Rubber Company, was appointed factory manager.

New Officers for Amazon

In line with its announced policy of expansion and increased production in 1920, the annual meeting of the Amazon Rubber Co., of Akron, reveals important additions to the executive staff of the company, the proposed purchase of a larger manufacturing site and more than three-fold increase in the concern's capitalization.

The new officers are: President, Dr. E. E. Quirk, a prominent Akron capitalist and successful business man; vice-president, Frank H. Burch; treasurer, Walter Herberich, and secretary, George Hupp, who also is general manager.

The directorate includes such well-known names as Louis Schott, who started the company in 1916; Dr. Quirk, Frank H. Burch, George Hupp, Gus Burkhardt, Albert Kroehle, W. A. Boesche, M. D. Kuhlke and J. A. Berke.

The new factory site, an option on the purchase of which has been obtained, is located in East Akron, on the Little Cuyahoga River, with excellent railroad facilities. Plans are being drawn up for the factory building which it is expected will be erected during the year.

Tire production is immediately being increased from 250 to 500 tires daily and further increases will be made as soon as the necessary equipment is available.

The capital stock is increased from $400,000 to $1,500,000, only $300,000 of which is to be sold at the present time at a par value of $100 a share.

Dr. Quirk, the new president, who several years ago left a large dental practice in order to take care of important financial affairs, is an officer in several of Akron's leading business organizations. Besides his business activity, he is an enthusiastic club man, having organized the widely-known Akron City Club.

Name Plant for Col. Colt

By a vote of the executive committee of the United States Rubber Company, the new tire factory of the company at Providence is to be called the "Colt plant," in honor of Col. S. P. Colt, chairman of the board, whose home is in Rhode Island.

The factory is one of two units operating as the Revere Rubber Company and has heretofore been known as Revere plant No. 2. The Colt plant was acquired by the company early in 1918 from the American Locomotive Company. All the truck tires, both solid and pneumatic, made by the United States Rubber Company will be manufactured at this plant.

Rubber Products Personnel Changes

At a recent meeting of the directors of the Rubber Products Company, Barberton, Ohio, the following changes in the personnel of the organization were acted upon: J. W. Blaser, one of the leading business men of the Akron district, and director of the company, was elected treasurer and director of sales; W. S. Dellett, until recently Northwestern manager, will assume the duties of sales manager, with headquarters at Barbeton, succeeding Edward S. Babcox, resigned; H. P. Harding, well known among the Eastern trade, has accepted the position of Eastern district manager.

These changes will greatly strengthen the management of the sales organization and an increase in sales of over 200 per cent. from last year is anticipated. Already the increased demand for Stronghold tires and tubes has necessitated the building of large additions to the factory. New curing equipment has been received and installed and a new shipping room is being rushed to completion

American Chemical Society Meeting

Announcement is made of the spring meeting of the American Chemical Society in St. Louis, April 13 to 16 inclusive. The Rubber Division will meet on the 14 and 15.

The Division extends the invitation to all rubber chemists and technologists to attend this meeting. Since the rubber chemist has ordinarily to deal with technical problems not entirely chemical, much material is usually presented at these meetings which is of general interest. One such item to be discussed at the next meeting is the report of the committee on "Physical Testing."

Authors desiring to submit papers for presentation at the meeting should send the titles of the papers together with abstracts to A. H. Smith, Research Laboratory, Goodyear Tire and Rubber Co., Akron, Ohio, by March 25.

Tire Yarns in Great Demand

The growing demand for tire yarns is said to have had considerable influence upon the cotton mills in the New Bedford, Mass., district. It is stated that spinning mills which for years have turned out cord and yarn for the regular trade are now giving their undivided attention to the production of tire yarns. The same condition of affairs applies to many of the weaving mills, where the manufacture of staple lines of fabrics has been done away with in order to supply the ever-increasing demand for tire fabric.

Considerable difficulty is being experienced in obtaining sufficient tire yarn of the required quality Many of the leading tire manufacturing firms have their own mills where the yarn is manufactured in sufficient quantity to supply their own needs. The cost of building have limited this to the larger companies who have abundant funds at their disposal.

Other firms have been able to secure the coveted yarns by offering spinning plants attractive propositions to spin and weave for them alone. Frequently when this method of procedure obtains the tire company will agree to furnish the cotton while a number of tire firms offer a sliding scale of prices which operate in the event of an increase in the cost of labor. Other features have combined with the foregoing to make this business exceedingly attractive to spinners. So profitable has this business become that a number of cloth mills have found it to their advantage to devote their entire spinning activities to the manufacture of tire yarns and to that end have ceased entirely from making their regular lines.

Hammond Special Representative

F. N. Hammond has recently been appointed special representative of the sales department of the Portage Tire and Rubber Company, of Barberton, Ohio. Mr. Hammond was successful as Goodyear branch manager in Cleveland for a number of years. He later became branch

F. N. Hammond

manager in Detroit for Kelly-Springfield and established an enviable record for increased sales.

European Trade Outlook

Trade with Europe will soon assume many pre-war characteristics, with the added feature of being many times more brisk, in the opinion of A. C. Frank, export manager of the Firestone Tire and Rubber Co. Frank recently returned to New York City after a trip of three months in England and continental Europe.

"Although they are still suffering from the industrial difficulties which were the inevitable result of the war, the European nations will soon regain their old-time commercial aggressiveness, I believe," Frank said. "The resourcefulness they showed in the war will reassert itself in peace and they will again demonstrate their stamina by reclaiming a share of the world's trade.

"The industrial activity of Belgium is particularly noteworthy. This plucky country, undaunted by its tremendous hardships, is now rapidly placing its factories on a quantity production basis, and is doing much toward the rehabilitation of the devastated districts.

"International trade, after the resumption of European industries, should develop, I believe, to a degree heretofore considered impossible. I look for an unparalleled era of trade among all nations."

Egyptian Cotton Conditions

The Alexandria Cotton Company, Ltd., of Boston, Mass., has received the following letter descriptive of cotton conditions in Egypt. The letter which is dated January 23 is as follows:

Since the last report, the futures market has been very excited, fluctuations of $2 to $3 being of daily occurrence. January went out on 22nd inst., at $123.25; the actual quantity of cotton tendered during the month was 6750 cantars.

The spot market has been much quieter than during the past few weeks, but this must be attributed to some extent to the exorbitant demands of sellers, who prefer holding off the market to selling their cotton at the present level of prices; native merchants are at present buying in the interior at rates about five to ten cents per pound above the market rates in Alexandria.

The demand from abroad has been only moderate, and should it continue so for some time a change in the present attitude of sellers is very probable.

The arrivals from up-country have now reached about 4,680,000 cantars, and basing ourselves on estimates received relative to cotton in ginning factories or with cultivators in the villages, we maintain our opinion that the outturn of 1919 crop will amount to about six million cantars.

Katzenbach and Bullock to Move

The Katzenbach and Bullock Co, Inc., importers, exporters and manufacturers of chemicals and colors, now at 100 William St., New York, where they have been located since the incorporation of the company, have purchased through Charles F. Noyes Company the six story and basement building, owned by Theodore Burt Sayre, located at 440 Washington St., New York. The firm expects to move into their new home on or about April 1. The first and second floors will be used for offices; the balance of the space for storage, laboratory, testing rooms, etc. The company also maintains offices at Boston, Trenton, Philadelphia, Akron, Montreal, Chicago and San Francisco. Stocks are carried at all the offices and other convenient points.

Goodyear Employes Increase

According to government statistics, the surplus of labor throughout the United States is steadily decreasing. The condition of unemployment that followed in the wake of the war has been remedied to a large extent by the need for labor in western cities. To give some idea of the demand for labor in Akron, Ohio, the Goodyear Tire and Rubber Company now has the largest number of employes in its history. There are 30,393 employes on its payroll in Akron alone. Indications are that this will be increased greatly when new extensions are completed.

Avalon Elects Officers

At a recent meeting of the board of directors of the Avalon Rubber Mfg. Co. the following officers were elected: J. F. Hower, president; L. K. Hower, vice-president; C. A. Carlton, secretary; C. E. Siegfried, treasurer. These officers with W. S. Salisbury, George Landis and I. W. Maibach constitute the board of directors.

The company reports a very successful year. The capital stock has been increased from $200,000 to $1,500,000.

MARKETS

Manufactured Rubber Goods

NEW YORK, March 6, 1920.

Although there are some signs that the peak of prices has been reached in other lines, thus far there has been no indications that such a condition is imminent in the rubber trade. Although the price basis for crude rubber has not shown much fluctuation recently, the markets for the crude materials entering into the manufacture of manufactured rubber goods have been soaring steadily. Labor troubles have been given as one of the main causes in the increased price schedules submitted to rubber manufacturers, while transportation difficulties also contribute to high costs. With rumors of impending freight increases by the railroads, the outlook is none too promising for lower prices.

Manufacturers who have gone into their own margins to make up the increased cost of raw materials are now being forced to pass these advances on to the consumer, and consequently the market for manufactured rubber goods is generally a firm one in all branches.

EXPORTS

Thus far, no progress has been made in working out a solution of the foreign exchange situation, and international credit consequently remains in a chaotic condition. Foreign buyers are returning many consignments of American products which have already been shipped abroad as they are unable to pay for the goods at prevailing rates of exchange. A plan suggested in Great Britain whereby Germany would be allowed to rehabilitate herself by floating an external loan of several billion dollars, this loan to take precedence over the indemnity, is now receiving the serious consideration of the Supreme Council, but it is doubtful whether or not the plan will go through, due to determined opposition in France. It is thought that the floating of such a loan would go a long way toward patching up the exchange situation. Exporters are also considerably interested in reports that an early resumption of commercial relations with Russia is looked for in high Government circles.

AUTOMOBILE TIRES

The general advance in tire prices, reported as having been tentatively agreed upon by the leading tire manufacturers, has not yet been announced, but an early announcement to this effect would not come as a surprise to the trade, which has been looking for such action for some time past now. Reports from Alexandria to the effect that the market on Egyptian cotton has receded considerably will not have any effect upon the decision to advance prices, it is thought, as manufacturers are now working on high-priced fabric and will not feel the benefits of the lower market in Egypt for some time, even should the market fail to recover its losses. The growing tendency on the part of the larger manufacturers to produce as much as possible their own materials also serves to protect them in time of rapid price advance.

While no inkling as to the price increases planned has leaked out from the "Tire City," it is thought that prices will be restored on a parity, at least, with those prevailing before the general reduction last fall.

DRUGGISTS' SUNDRIES

There is a steady routine call for druggists' sundries reported, although retailers are not showing much disposition to buy in large lots. The recent spell of cold weather brought out a fair call for hot water bottles and other sundries, and supplies were well sold up. A routine call for rubber surgical goods is reported, a good demand being reported for both domestic and foreign account.

BOOTS AND SHOES

Retailers reported an abnormal demand for rubbers during February, due to the succession of storms. Figures compiled in the trade show that fully 2,000,000 pairs of rubbers were sold during the latter half of January and the first half of February, most dealers being completely cleaned out. As the "season" had closed, the retailers found it next to impossible to obtain any replacement from the manufacturers.

With the approach of spring and summer weather, manufacturers are putting out their lines of rubber footwear. Indications point to a record season for rubber and canvas footwear during the coming summer months, wholesale distributors being well stocked up already. Nation-wide consumer advertising on the part of some of the larger makers has created a strong demand for these products. Some difficulty in obtaining sufficient labor at the rubber companies turning out footwear is being experienced, it is reported from the West.

Demand for rubber heels continues to keep manufacturers working at top speed to handle their business. In addition, there is a good export call for this product. Fibre and composition soles are still going slowly with the domestic trade, due to the freeness of money with the consuming public, who are buying the best grades of sole leather. The fiber and composition soles are going well abroad.

MECHANICALS

With the return of the railroads to private ownership on the first of this month, manufacturers are looking for some business on hose, couplings, and other products, as it is generally believed that such supplies are well used up by the various roads. Demand for conveyor belting is reported as routine at this time, while business in marine and other specialties is about normal for this season. Manufacturers of hose are booking a fair volume of spring business.

MISCELLANEOUS PRODUCTS

Manufacturers of rubber jar rings are putting out their lines to the trade at this time. Business last year was disappointing, largely due to the shortage of sugar, which served to limit home canning, but with refiners predicting a normal supply of the precious "gold dust" for this year it is believed that a larger amount of fruits, etc., than ever before will be put up by housewives, and a resulting strong demand for rings is expected.

A good call for bathing slippers and caps is reaching manufacturers, who are putting out their summer lines at the present time. A good demand for rubber balls, balloons, and other toys and novelties also exists.

Cottons, Yarns and Fabrics

NEW YORK, March 6, 1920.

March option cotton touched a new high level a few days ago, the market closing at 38.67 cents per pound, although the market had touched 38.75 during the day's trading. The market has shown a strong technical position, and declines in Liverpool have failed to materially affect the domestic market. Foreign weakness developed during the week on heavy liquidation by English interests, this selling wave being occasioned by the sharp break in the Alexandria market.

Stocks of cotton available for deliveries against contracts sold for nearby positions are totally inadequate to make delivery, and short interests have been compelled to boost the market again when forced into the market to cover their commitments. The report of the plan set on foot abroad to allow Germany to float an external loan has also acted as a bullish factor in the market, as exports would be greatly increased should Germany be able to come into the market to cover her large needs of the staple.

The Southern spot markets are not paying much attention to the futures market, insofar as shaping asking prices, and reports from Southern primary markets report a fair volume of sales, particularly at South Atlantic and Gulf ports, the export movement continuing heavy, despite the unfavorable position of exchanges.

EGYPTIAN COTTON

A temporary check has been administered to the speculators who have been running up prices on Egyptian cotton in the Alexandria market, and a grand smash was reported by cable last week. According to early reports, the exchange there had been forced to shut down due to the heavy break, but this report was subsequently denied. Several large firms failed for large amounts, however, and

many speculators were also bankrupted through the collapse of the over-inflated prices. Speculation has been checked to some extent, and a heavy selling wave was brought on by the market break.

AMERICAN-EGYPTIAN COTTON

There is a steady movement of American Egyptian cotton into consuming channels and the market continues firmly quoted in Eastern markets. Spinners are in the market for practically unlimited quantities of long staple cotton, and are having difficulty in getting enough desirable grade stocks to fill their current consuming requirements.

SEA ISLAND COTTON

The market is a strong one under light offerings, and there is an active demand reported in Southern markets. The market on No. 2 and choice cotton, with average staple, is reported nominally held at 80 cents per pound in the South, while fine to fully fine holds about 85 to 87 cents per pound. Extra fine Islands is in small supply, and prices vary considerably, being quoted from $1.00 to $1.40 per pound, according to the holder. There is some export demand for the top grade reported.

TIRE FABRICS

Spinners are working at top speed to fill the abnormal demand for tire fabrics, and the market is strongly held, with demand exceeding available supplies. The market is, to a large degree, nominal, prices varying with different sellers. Whether or not the drop in the market at Alexandria will be reflected in prices for Egyptian cotton tire fabrics is not yet known, but it is doubtful unless the market should stay down or go to lower levels. Buyers who placed contracts for tire fabrics are getting them at about the following basis: combed Sea Island, $2.25 @ $2.40 per square yard, combed Egyptian $2.00 @ $2.15 per square yard, carded Egyptian $1.80 @ $1.90, carded peelers $1.25 @ $1.30, combed peelers $2.25 @ $2.35.

HOSE AND BELTING FABRICS

A strong tone rules in the market for ducks of all descriptions, and an active inquiry for supplies is reported. Firmness in the market for long staple cottons precludes any lower prices on ducks until the market for the raw material shall have shown some recession. Hose and belting ducks hold quotably unchanged at 73 to 76 cents per pound, and shoe ducks at 84 to 94 cents per pound. Enameling, single, and double filling ducks are quotably unchanged.

DRILLS, SHEETINGS AND OSNABURGS

Most of the trade in the local market for the past several weeks has been done by second hands, first hands doing very little. Mills are now coming into the market again, as the stocks offered for re-sale are being cleaned up. The prices given below on drills and sheetings are mostly second-hand prices, mills asking a few cents above these prices for the same constructions. There is a fair business being done along quiet routine lines in the local market.

BURLAPS

Imports of burlaps are being cut down by American importers, who are unable to obtain any authentic information from Calcutta as to the state of the market there, due mainly to cable delays. Sellers are unable to book any future orders for burlaps, except at value, as they have no inkling as to costs on goods they buy for future delivery in the local market. Importers at Boston and Philadelphia are faced with the same situation. Some spot goods are offering, as quoted below, at prices below those previously prevailing.

TIRE FABRICS

17¼-ounce Sea Island, combed.	sq. yd.	2.25	@	2.40
17¼-ounce Egyptian, combed		2.00	@	2.15
17¼-ounce Egyptian, carded		1.80	@	1.90
17¼-ounce Peelers, carded		1.25	@	1.30
17¼-ounce Peelers, combed		2.25	@	2.35

DUCKS

Belting (pound basis)	lb.	.73	@	.76
Hose (pound basis		.73	@	.76
Enameling		.88	@	..
Shoe Ducks		.84	@	.94
Single filing	yd.	.34	@	.36
Double filing		.37½	@	.40

DRILLS

37-inch 2.35-yard	yd.	.34	@	.34½
37-inch 2.75-yard		.30	@	.31
37-inch 3.00-yard		.28	@	.29
37-inch 3.25-yard		.27½	@	.28
37-inch 3.50-yard		.25½	@	.26
37-inch 3.95-yard		.23	@	.24
37-inch 2.00-yard Southern		Nominal		
37-inch 2.00-yard Northern		Nominal		
40-inch 2.40-yard Southern		Nominal		
40-inch 2.40-yard Northern		Nominal		
52-inch 1.90-yard Southern		Nominal		
52-inch 1.90-yard Northern		Nominal		

SHEETINGS

40-inch 2.35-yard	yd.	....	@	....
40-inch 2.50-yard		.33	@	.35
40-inch 2.85-yard		.31	@	.32
40-inch 3.00-yard		....	@	....
40-inch 3.25-yard		....	@	....
40-inch 3.75-yard		.26	@	.27
40-inch 3.60-yard		.28	@	.29½
40-inch 4.25-yard		.23½	@	.24

***Note.*—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.**

BURLAPS

(Carload lots)

		Cents Per Yard		
7 -ounce 40-inch		11.25	@	....
7½-ounce 40-inch		....	@	....
7½-ounce 45-inch		11.25	@	11.50
8 -ounce 36-inch		....	@	....
8 -ounce 40-inch		11.75	@	....
8½-ounce 40-inch		12.25	@	....
10 -ounce 36-inch		....	@	....
10 -ounce 40-inch		16.65	@	....
10 -ounce 45-inch		Nominal		
10½-ounce 40-inch		16.75	@	16.85

EXPORTS FALL OFF

Fortunately for the consuming element, there is but little buying of compounding materials by the export trade at the present time. The present basis of credits is all against foreign buyers, and thus the market is spared the possibility of an increase which might assume the proportions of a stampede. Routine consignments are going out to South and Central America, but Europe is not doing anything in the American market.

Shipments of some German chemical products to this country are being resumed. It is understood that the Government will protect domestic producers by allowing importations only of chemicals, etc., which have not been successfully produced here under the German patents, which were turned over to American concerns when we entered the war. As the ingredients, methods of preparation, etc., were nearly all falsely stated by the Germans in filing patents, American chemists have not been able to solve all of the formulas and processes.

BENZOL

Production is barely keeping pace with consuming requirements, but manufacturers are able to take care of their regular trade, and are allotting benzol at about 27 cents per gallon for the pure quality, with 90 per cent offering at about 25 cents per gallon. In second hands, the market is quoted up to 30 cents per gallon for the pure.

LITHARGE

Continued strength rules in the market for litharge, and producers report that the volume of business offered is far beyond their capacity to handle. The market is still strongly maintained on the basis of 11¾ @ 12¼ cents per pound for American powdered in casks, while in 100 ponud kegs for less than 500 pounds the market holds at 15½ cents, 500 to 2,000 pounds 13.95 cents, and correspondingly lower prices on larger quantities.

LITHOPONE

The market is somewhat unsettled, due to the heavy demand, but the market is generally held at 7½ @ 7¾ cents per pound, although some producers are reported to be asking a trifle higher prices. The larger producers are accepting no contract business for more than three months, and it is rumored in the trade that spot prices may be marked up somewhat as a means of checking the demand, which is literally swamping producers.

WHITING

A quiet market for whiting is reported, and producers are still troubled with a shortage of chalk from abroad. The market on commercial holds at $1.40, with American Paris white unchanged at $1.75. Producers thus far have been unable to catch up with their business, but are making some headway in this direction as the movement of chalk improves.

ORANGE MINERAL

An advance of ¼ cent per pound in the price of orange mineral has been made since our last report, the market now being held at 15¼ @ 16½ cents per pound. Demand continues to exceed the supply, and the outlook is reported to be distinctly bullish. Producers are continuing to ignore the export market in the rush of trying to take care of their regular domestic customers.

BARYTES

No change in the contract price on barytes has been reported, and producers are still quoting the market at $23.00 @ $25.00

Chemicals and Compounding Materials

New York, March 6, 1920:—Increasing scarcity of many lines of chemicals and compounding materials is reported in the domestic market and the price undercurrent, therefore, is a firm one. Producers of the raw materials are faced with many difficulties, first and foremost being trouble experienced in getting sufficient or capable labor. Lead pigments are leading the vanguard of price advances as the increasing costs of lead are forcing the market upwards. Supplies of lead are expected to become larger within the next few months, the advent of milder weather always stimulating production. No promises for early reductions in lead pigments are held out, however.

Thus far the market for compounding materials and chemicals in general has not felt the downward movement brought about in other lines by continued lack of export demand, and selling pressure brought about by having the banks put the screws upon speculators. It is held that the firm basis ruling in the market is a legitimate one, determined upon by the old law of supply and demand, the latter exceeding the former by a very wide margin in many lines.

per ton. Leading producers declare that they will do all in their power to hold down prices. Considerable difficulty is being experienced in getting shipments from the mills, due to the continued shortage of freight cars. Reports from the West state that shipments are being put out as fast as weather conditions and transportation facilities will allow. The market on pure white holds firm at $34 @ $36 per ton.

ZINC OXIDE

Heavy buying from the tire and automobile trades is reported, and the market is showing a strong tone. Quotations are strongly held as folows; French process, red seal, 11½ @ 11¾ cents per pound; green seal 12½ @ 12¾ cents, white seal 13½ @ 13¾ cents per pound. Leaded grades held at; commercial, lead free, 8¾ @ 10½ cents per pound; 5 per cent, lead sulphate 9 @ 9½ cents; 10 per cent lead sulphate 9⅛ @ 9¼ cents; 20 per cent lead sulphate 8½ @ 9 cents per pound; 35 per cent lead sulphate 8¼ @ 9⅛ cents per pound.

OILS

Corn oil is quoted off a trifle, crude being quoted down to $19.00 per cwt., factory, with refined in barrels offering at $22.50 @ $23.00 per cwt. Palm oil has also eased off somewhat, the market on Lagos being almost 2 cents per pound lower, at 15¾ @ 16 cents per pound with Niger sharing in the decline being quoted at 14¾ cents per pound. Lack of export demand is given as the chief cause of the decline in prices at this time.

Current Prices for Chemicals, Fillers, Colors, etc.

Acetone, carlots	lb.	.13½ @	.14
smaller lots	lb.	.15 @	.16
Accelerator, in drums	lb.	.85 @	1.00
Acids, Acetic, 56%	cwt.	6.00 @	6.50
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	1.75 @	2.00
Muriatic, 22 deg.	cwt.	2.50 @	2.75
Nitric, 42 deg.	cwt.	7.00 @	7.50
Nitric, 40 deg.	cwt.	6.75 @	7.25
Sulphuric, 60 deg.	ton	16.00 @	17.00
Tartaric, crystals	lb.	.69½ @	—
Aluminum Flake	ton	29.00 @	31.00
Aniline oil, bulk basis, Contract		— @	—
Imported		Nominal	
Domestic		.32 @	.35
Antimony, metal spot	lb.	.11¾ @	.12
Oxide	lb.	.11½ @	.13
Sulphuret, red	lb.	.25 @	.30
Sulphuret, golden	lb.	.30 @	.35
Sulphuret, crimson	lb.	.45 @	.50
Needle, powdered	lb.	.11 @	.11½
Asbestos	ton	35.00 @	45.00
Asphaltum, Egyptian	lb.	.18 @	.30
Domestic	ton	.30 @	.40
Barium sulphate, technical		.04½ @	.05
Sulphide	lb.	.07¼ @	.07½
Barytes, prime white imported	ton	Nominal	
white, domestic	ton	34.00 @	36.00
off color, domestic	lb.	— @	—
Southern, f.o.b. mills		23.00 @	25.00
Western, f.o.b. mills		23.00 @	25.00
Benzol, pure, bulk	gal.	.27 @	.30
Beta-naphtol, sublimed	lb.	.70 @	.72
resublimed		1.05 @	1.10
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.25
Lampblack R. M.	lb.	.15 @	.45
Mineral blacks	ton	35.00 @	45.00
Blues Prussian		.85 @	.90
Soluble	lb.	.85 @	.95
Ultramarine	lb.	.15 @	.50
Browns, Umber, Turkey, burnt, powdered		.05¾ @	.07
American, burnt	lb.	.04½ @	.06
Cadmium sulphide, yellow	lb.	1.75 @	1.80
Carbon bisulphide, bulk	lb.	.06 @	.07
Bisulphide	lb.	.06 @	.07
tetrachloride, drums	lb.	.10½ @	.11
Caustic Soda, 76%	cwt.	5.00 @	5.50
Chalk, precipitated, extra light	lb.	.05⅝ @	.06⅝
heavy	lb.	.04 @	.04½
China clay, domestic	ton	8.50 @	20.00
imported	ton	18.00 @	23.50
Fossil flour	lb	.03¾ @	.05
Gilsonite	ton	50.00 @	60.00
Glue, extra white	lb.	.35 @	.40
medium		.30 @	.35
low grade		.20 @	.25
foot stock		.13 @	.18
brown foots		.12 @	.16
common bone		.11 @	.15
Glycerine, C. P. (drums)	lb.	.24 @	.24½
cans		.26 @	.26½
Graphite, flake (bbl.)	lb.	.14 @	.25
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.39 @	.60
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.40 @	1.60
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.13 @	.15
red, pure, bright	lb.	— @	—
Lead, red, dry (casks)	lb.	.12¼ @	.12½
sublimed	lb.	— @	—
white, basic carb.	lb.	.10½ @	.11
white, basic sulp.	lb.	.09¾ @	.10¼
Lime flour	lb.	.01¾ @	.02
Litharge (casks)	lb.	.11¾ @	.11¼
English		— @	—
Lithopone, domestic, bbls.	lb.	.07½ @	.07¾
in bags	lb.	.07¼ @	—
Magnesia, carbonate	lb.	.17 @	.21
calcined light	lb.	.60 @	.65
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.26½ @	—
68 @ 70 degrees (steel bbls.)	gal.	.33½ @	—
70 @ 72 degrees (steel bbls.)	gal.	.35½ @	—
73 @ 76 degrees (steel bbls.)	gal.	.26½ @	—
machine (steel bbls.)	gal.	.45½ @	—
Oil corn, crude factory	cwt.	19.00 @	—
corn, ref. (bbls.)	cwt.	22.50 @	23.00
linseed (bbls.)		1.80 @	—
in carloads, spot		1.77 @	—
tank cars		1.72 @	—
Oil palm, Lagos	lb.	.15¾ @	.16
Niger		.14¾ @	—
pine, yellow	gal.	1.21 @	—
rapeseed, refined	gal.	1.65 @	—
rapeseed, blown	gal.	1.70 @	—
rosin, first rectified	gal.	90 @	—
second run		.92 @	—
tar (commercial)	gal.	.36 @	.38
Orange mineral, Amer.	lb.	.15½ @	.16½
imported		— @	—
Paraphenylenediamine	lb.	2.50 @	3.00
Petrolatum, bbls., amber	lb.	.06 @	.07
pale yellow	lb.	.06½ @	.07¼
Pine tar kiln	bbl.	14.50 @	—
Pitch	bbl.	8.50 @	—
Plaster of paris	bbl.	2.00 @	3.00
Red Tuscan	lb.	.22 @	.30
red (American)	lb.	.14 @	.16
Indian (English)	lb.	.14 @	.16
Standard	lb.	— @	—
Rosin (common to good)— 280 lbs.	bbl.	17.25 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Shellac, fine orange	lb.	— @	—
T. N.	lb.	1.50 @	1.55
Bleached ordinary	lb.	1.45 @	1.50
Bleached bonedry	lb.	1.75 @	1.80
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered	ton	12.00 @	17.50
Starch, corn, powd.	cwt.	5.97 @	6.23
pearl		4.97 @	5.19
Jap, potato duty pd,	lb.	.09½ @	—
Sulphur, crude	ton,	— @	—
100 pounds		— @	—
roll		3.20 @	—
commercial superfine		1.99½ @	2.10
Talc, American	ton	20.00 @	40.00
French	ton	— @	—
Toluol, pure, in drums	gal.	.30 @	.32
commercial		.30 @	.32
Tripolite earth	lb.	.01⅛ @	—
Turpentine, pure gum—spirit	gal.	2.08 @	—
wood	gal.	1.60 @	—
Venice, artificial	gal.	.15 @	.16
true		4.50 @	4.75
Vermilion, English	lb.	1.35 @	1.45
American		.25 @	.30
Wax, beeswax, crude yel.	lb.	.40 @	.44
refined		.44 @	.47
Bayberry		.40 @	.41
ceresin, white	lb.	.15 @	.16
yellow		.15 @	.16
Zinc Oxide, French process, red seal		.11½ @	.11¾
green seal		.12½ @	.12¾
white seal		.13½ @	.13¾
Leaded Grades— Commercial, lead free		.08¾ @	.10½
5% lead sulphate		.09 @	.09½
10% lead sulphate		.09½ @	.09¼
20% lead sulphate		.08½ @	.09
35% lead sulphate		.09¼ @	.09⅞

* Car lots. † Less than car lots.

Crude Rubber

NEW YORK, March 6, 1920.

Considerable firmness in Plantation grades, particularly in near positions, has developed during the past fortnight, and the market has shown more strength. Speculative buyers have re-entered the market in a small way, and buying by these interests is said to have made the market more firm. Buying by trade interests is not very large at this time, however, most of the larger rubber consumers are well covered and are receiving their crude stock for future use by direct shipment from primary markets.

Para rubbers do not share in the firmness of the market and selling pressure in some quarters is keeping the market in an easy position, with nominal prices on most descriptions. Up river fine is offering at 41½ cents per pound, with coarse offering at 32 cents, and medium at 41½ cents per pound. Islands fine hold at 42 cents per pound, while holders are quoting 20½ cents per pound on Islands coarse.

London reports a steady market at 33 d. c. i. f. New York. On future shipment rubber, the market is held here on the following basis for smoked ribbed sheets: March 46½ cents per pound, April-June 48 cents, July-September 49¼ cents, and 49½ cents per pound for the last half of the year.

	Cents per Pound.		
Para—Up-river fine	41½ @	46	
Up-river medium	41½ @	....	
Up-river coarse	32 @	....	
Caucho ball	33 @	....	
Islands fine	42 @	....	
Islands coarse	20½ @	....	
Cameta	21½ @	....	
Madeira, fine	49 @	....	
Knapsack	.... @	....	
Ceylon—Smoked sheets, ribbed	46½ @	....	
Smoked sheets, plain	45 @	....	
First latex pale crepe	47 @	....	
Amber crepe	Nominal		
Clean brown crepe	44 @	44½	
Rio Nunez string	.... @	....	
Palembang	14 @	....	
African	33 @	....	
Prime Surinam sheets	.... @	....	
Centrals—Corinto prime	31 @	....	
Esmeralda, prime	31 @	....	
*Balata sheets	.... @	....	
Guayule, wet	25 @	27	
Balata, block, Panama	.... @	....	

* Nominal.

Scrap Rubber

NEW YORK, March 6, 1920.

Routine trading features the market for scrap rubber, and there is little activity noted outside of the usual channels. Buyers are not operating extensively, but are contenting themselves with making hand to mouth purchases, covering their consuming requirements as they go along.

The market has not showed any appreciable change, prices being nominally held on all varieties. The trade is looking for a more active demand from reclaimers with the approach of spring weather, and is preparing to handle a good volume of business. The present easy undertone ruling in the market for crude rubber is keeping down the normal demand for scrap to some extent.

	Cents per Pound.		
Boots and shoes	7.75 @	8.25	
Arctics, trimmed	6.00 @	6.25	
Arctics, untrimmed	5.00 @	....	
Tires—Automobile	3.50 @	4.00	
Bicycles, pneumatic	2.50 @	3.00	
Mixed hose	1.00 @	1.75	
Air brake	2.75 @	3.00	
Inner tubes, No. 1	14.50 @	....	
Inner tubes, No. 2	10.00 @	11.00	
Red tubes	9.50 @	10.00	

American Rubber Patents

ISSUED FEBRUARY 17, 1920.

1,330,784—To Don A. Clark and Clyde E. Lowe, Cleveland, Ohio, assignor to the Republic Tool & Manufacturing Co., Cleveland, Ohio. Tire-core.

1,330,815—To James B. O'Connor and Lawson Tarwater, Kansas City, Mo. Sectional pneumatic tire.

1,330,855—To Frederick William Farr, Northampton, England. Method of repairing pneumatic-tire covers.

1,330,058—To William J. Shriver, Milwaukee, Wis., and Charles K. Heasley, Chicago, Ill. Tire-retreading form and method of constructing the same.

1,330,976—To Harry L. Boyer, Trenton, N. J., assignor to Joseph Stokes Rubber Co., Trenton, N. J. Apparatus for forming composite bodies of rubber and fibrous material.

1,331,023—To Theodore L. Morton, New Orleans, La. Inner tube for tires.

1,331,060—To William P. Hammond, Passaic, N. J., assignor to A. Schrader's Son, Inc., New York. Dust cap for valves of pneumatic tires.

1,331,124—To Lindsay C. Pritner and Lewis S. Paul, Johnstown, Pa. Tire-carrier.

1,331,146—To Edmund W. Fothergill, Hartford, Conn., assignor to Hartford Rubber Works Co. Tire-vulcanizing mold.

1,331,199—To Raymond I. Hill, Elyria, Ohio, assignor to the Hill Rubber Heel Co., Elyria, Ohio. Rubber heel.

1,331,244—To Albert P. Crell, Grand Rapids, Mich., assignor to New Era Spring and Specialty Co., Grand Rapids, Mich. Tire-carrier.

1,331,245—To Albert P. Crell, Grand Rapids, Mich., assignor to New Era Spring and Specialty Co., Grand Rapids, Mich. Tire-carrier.

1,331,347—To Joseph McNamara, Clinton, Mass. Quick-detachable combined dust and air cap for valve-stems.

1,331,358—To Joseph Parrino, Buffalo, N. Y., assignor of one-half to Guiseppe Di Girolamo, Buffalo, N. Y. Vehicle-tire.

1,331,359—To Arthur Hughes Parrott and Harold Round, Birmingham, England, assignors of one-third to Robert Henry Davis, London, England. Air-cushion.

1,331,391—To Ross Smith, Terrell, Texas. Anti-skid device.

ISSUED FEBRUARY 24, 1920.

1,331,541—To Harry William van Meeteren, Birmingham, England. Tire-securing device.

1,331,606—To Thomas Widdop, Ogden, Utah. Tire.

1,331,926—To Hans P. Johnson, Racine, Wis. Auto tire-carrier.

1,332,121—To Louis Friedman, New York, N. Y. Demountable rim.

1,332,149—To Philippe Emile van Berendonck, Amsterdam, Netherlands, assignor to Berendonck's Section Tyre Syndicate, Ltd., Amsterdam, Netherlands. Pneumatic tire.

1,332,169—To Joseph Ellis, Chicago, Ill., assignor to Featheredge Rubber Co. Method of making rubber-type stamps.

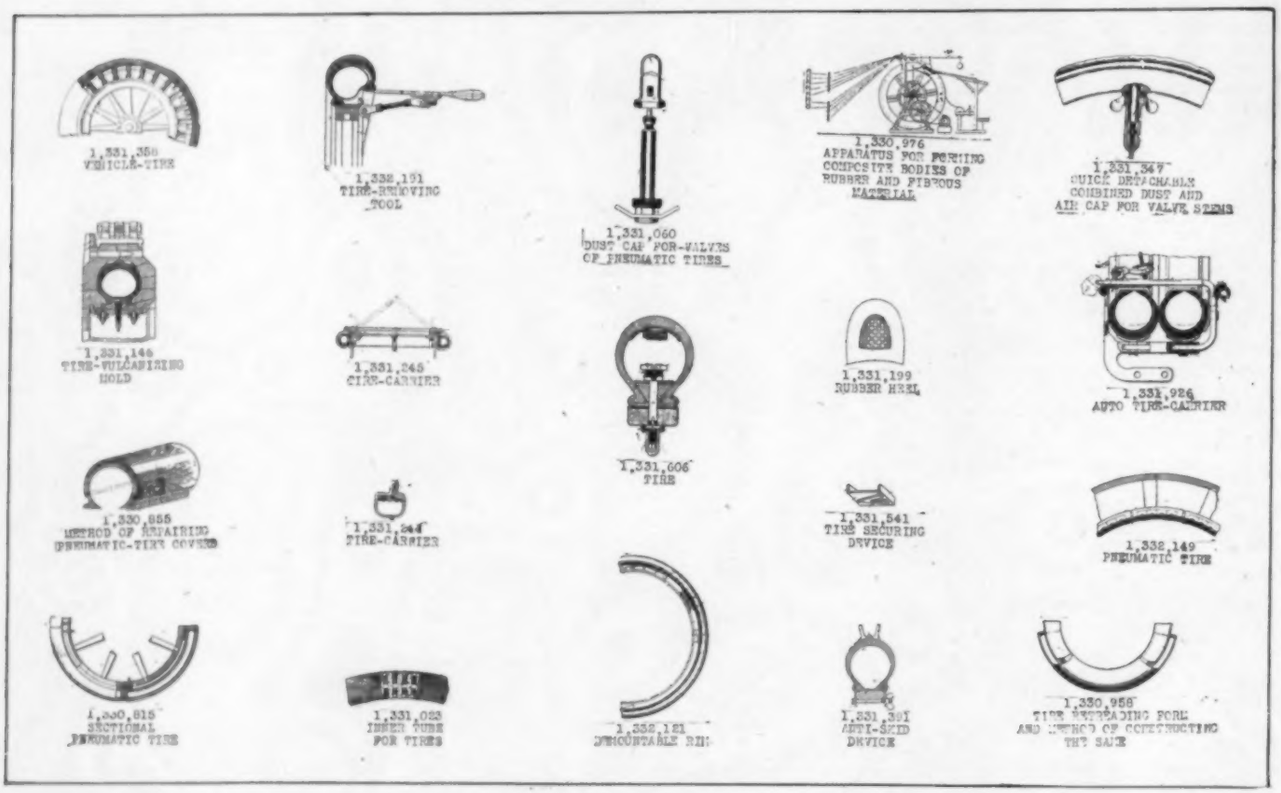
1,332,191—To Christian C. F. Reininger, New York, N. Y. Tire-removing tool.

Parker Increases Stock

Announcement has been made to the effect that the Parker Tire and Rubber Company, of Indianapolis, Ind., has plans under way for increasing the stock of the company from $750,000 to $3,000,000. With the expansion of capital will come improvements and additions to the present factory.

The tentative plans call for an expenditure this year of approximately $500,000 on the new main factory structure. This building will be 600 x 100 feet, two stories of steel and brick construction. On the factory plot, which is owned by the company, it is also proposed to erect a two-story administration building. This will be to the east directly in front of the present main factory building. In the office building will be housed the general offices of the company, a print shop, cafeteria for employes, etc. President Paul P. Parker will have his home on the second floor, according to the custom much in vogue in the South.

When the new factory unit is completed, which is expected to be before the end of 1920, President Parker states the company will afford employment to 1,500 men and estimates that the output of cord tires in the next ten months will be increased to a daily average of close to 500. With the present facilities it has been necessary to work a partial night shift in order to keep pace with production demands.



Advertising Council Planned

M. L. Heminway, general manager of the Motor and Accessory Manufacturers' Association, has announced that a call has been issued to the advertising managers and executives of companies belonging to the association for an important business meeting in New York, on Friday, March 26.

The advisability of organizing a permanent advertising managers' council to function as a central clearing house for constructive co-operative work on advertising problems as they affect the automotive industry, will be considered at this meeting. The exact hour and place of the meeting have not yet been fixed. It is planned to have two or three speakers of national note give brief talks. The first meeting will be in the nature of a preliminary get-together business session.

More than 300 companies manufacturing tires, parts, accessories, motors and general equipment for passenger automobiles, motor trucks, aeroplanes, motorcycles, bicycles, tractors and motor boats are members of the M. and A. M. A. It is believed that this association of manufacturers constitutes one of the strongest and most influential group of advertisers in America. The largest tires, automobile parts and accessories companies in the country are members of the Association, and their appropriations are among the largest in the country.

Lambert Heads Chamber of Commerce

In accepting the presidency of the Trenton, N. J., Chamber of Commerce on Saturday evening, March 6, John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Company, paid a high tribute to L. L. Woodward, retiring head of the organization, and expressed the hope that the body would continue to prosper and expand under the new administration.

Mechanical Rubber Goods

For All Classes of Industries

Transmission Belting
Conveyor Belts
Elevator Belts
Canvas Belting
Sheet Packing
Rod Packing
Packings for all specific purposes
Pump Valves
Fire Hose
Steam Hose
Air Hose
Water Hose
Oil Hose
Railroad Hose
Suction Hose
Hose for other specific purposes
Tiling
Mats
Flooring
Moulded Goods
Plumbers' Specialties
Heels

Friction and Splicing Tape

United States Rubber Company

Service Tires

COST LESS-WEAR LONGER

Here's a Better Tire, Selling ⅓ Under Market, Allowing Dealers Bigger Profits and Exclusive Agencies

THIRTY-THOUSAND motor car owners in the United States (some probably neighbors of yours) have bought **Service Tires** during the last three years. They had to *send* to us *direct* for them. So great a bargain have we given that buyers, upon reordering, often ask for agencies.

Now the demand for **Service Tires** and for **Service Tire Agencies** has become general enough to warrant our offering dealers exclusive local contracts. We propose not only to offer them a most attractive business proposition but also to give them the benefit of our own direct sales made in their contracted territory. **Service Tires** are made in three styles, plain, non-skid and cord. They are fresh, high quality products

Guaranteed For 5,000 to 10,000 Miles

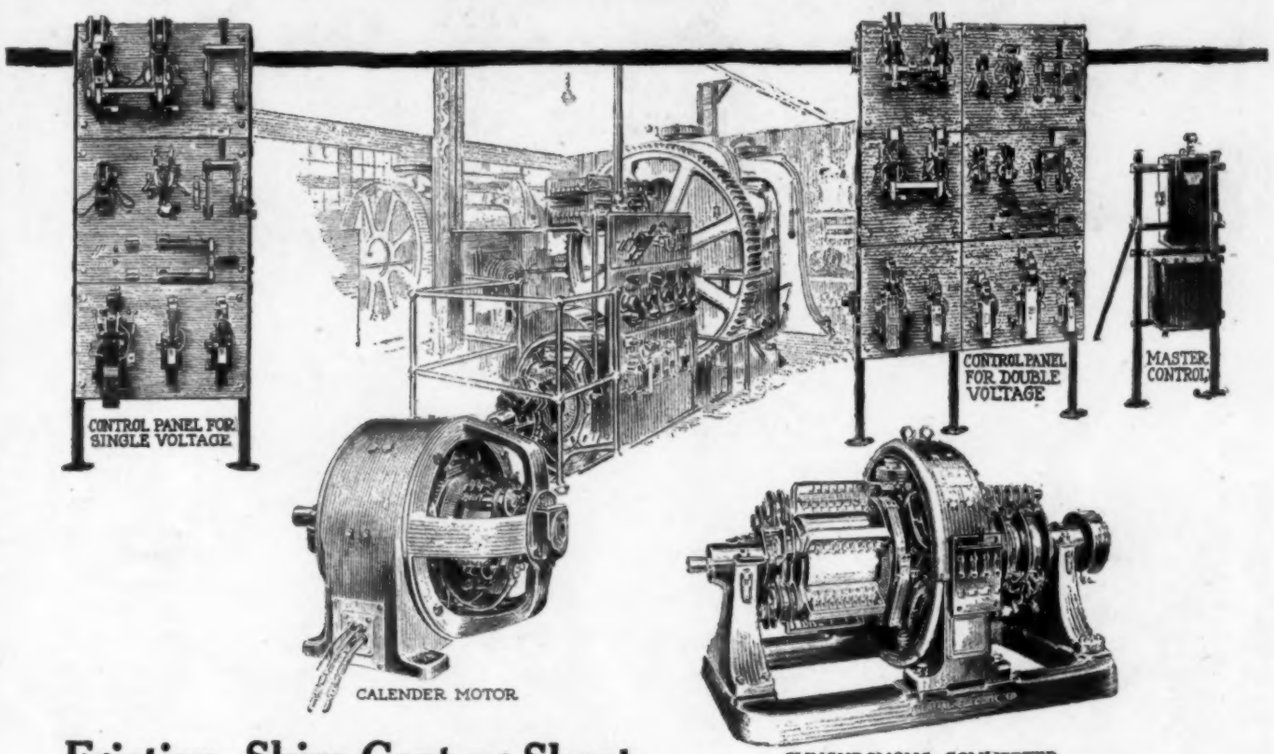
Don't confuse us with concerns handling "seconds," "retreads" or "rebuilts." **Service Tires** are *desirable* and have *made good.* They are marketed by a responsible and reputable Company that lives up to its promises and has promptly satisfied *every claim* made for adjustments. Dealers take no chances. We help dealers, whether big or little, by furnishing attractive advertising matter free. Rich dealers often prove less desirable than those of limited means. If interested, let us hear from you. You will be amazed at the profitable business and the loyal friends **Service Tires** will make for you. Write us for sample rubber to test and receive complete particulars about exclusive dealers' contract. Your territory goes to the first suitable dealer who asks us for it. Address

Service Rubber Co.
983 Service Bldg.,
KANSAS CITY, MISSOURI

Ask us for a free sample of Service Tire rubber which will prove to you the flexibility and endurance of this wonderful product.

Test it Yourself!

G-E Motor Drives eliminate uncertainty and thus greatly reduce losses due to waste and seconds



Friction, Skim Coat or Sheet at Any Speed You Need

G-E Calender Drives for either 115-230 volt—3 wire or 230 volt single voltage operation consist of a motor, control panels, emergency stop switch and push button stations with necessary resistances, all combined into a simple drive unit.

Moving controller handle starts the automatic acceleration of the motor. This operation continues at a rate which safeguards the motor, no matter how fast controller handle is moved.

If the double voltage equipment is used eighteen speeds are available on the lower voltage and eighteen additional speeds can be obtained on the higher voltage.

The "quick stop" device is operated by a rope or cross bar which is placed within convenient reach of operator.

When either the "quick stop" device or "safe stop" buttons shut down the motor, the latter cannot be started up until the stopping device is reset.

Our specialists will be pleased to tell you of other features of these drives.

Consult our nearest office for information on complete line of electrical equipment for Rubber Mills.

General Electric Company

General Office Schenectady, N.Y.

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BY

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Emarex is the only natural hydrocarbon which strengthens and preserves rubber. Having the same atomic structure as Para $C_{10}H_{16}$, it assimilates with all grades of rubber, fortifying the fibres by its imperishable nature, rendering the finished goods immune to light, heat, cold, atmosphere and time.

The remarkable aging quality of EMAREX and the reinforcement it gives to all grades of Rubber and Reclaimed, places it in an unassailable position in the Rubber Industry. It further admits of a curtailed use of rubber, thus reducing production costs. Manufacturers of high grade rubber goods use EMAREX, for they know by actual experience that it enables them to produce the excellence in their finished goods.

With Us Giving Value is a Habit

That has been our policy since the inception of this business. It will continue to be our policy.

"Next to Sulphur, EMAREX is the most important ingredient ever added to Rubber"

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Warehouses: New York City Boston, Mass. Trenton, N. J. Chicago, Ill.

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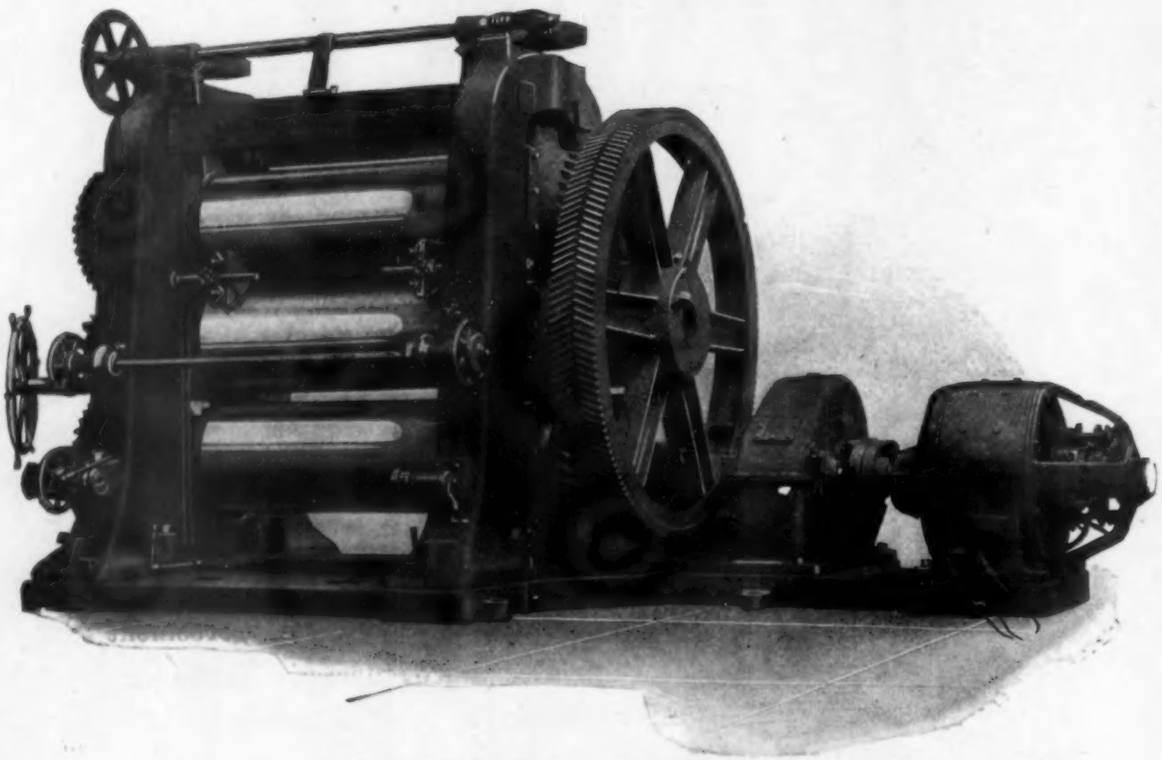
THE W-S-M CALENDER



24" x 66" 3-Roll Calender—Front View

Partial List of W-S-M Rubber Machinery

Calenders
Mills
Washers
Refiners
Crackers
Vulcanizing Presses
Hot Plate Presses
Rimming Presses
Tire Presses
Accumulators
Tube Vulcanizers
Transfer Cars
Heater Cars
Tire Building Stands
Tubing Machines
Fabric Dryers
Reduction Gears
Molds (Pneumatic and Solid, Plain or Engraved)
Cores
Shafting
Bearings

We also manufacture cast iron and steel gears, both with cast or cut teeth, solid or split, to meet any requirements; bed plates, iron and steel castings of all descriptions, and special machinery built to specifications.

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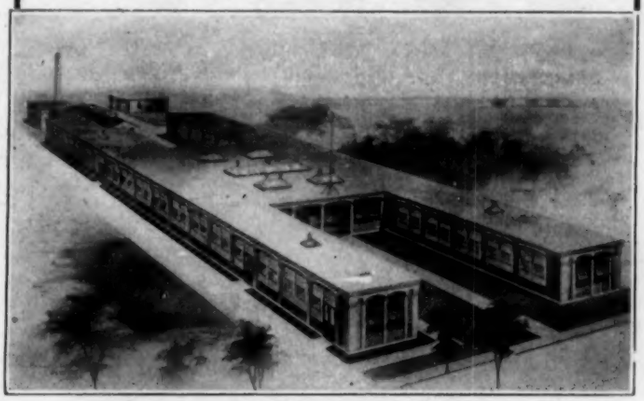

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Price $1.50

Schrader

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Keep this in mind when figuring your requirements.

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Atlantic Ave. Brooklyn, N. Y.

H&G

Please note that in addition to our Rubbermakers' Materials we carry stocks of most commercial Chemicals. For some of these you have an occasional call. It would be well, therefore, for you to keep handy a copy of our General List. It is full of useful information and is interleaved with ruled sheets for your convenience.

Have you received your copy yet?

THE HARSHAW FULLER AND GOODWIN CO.

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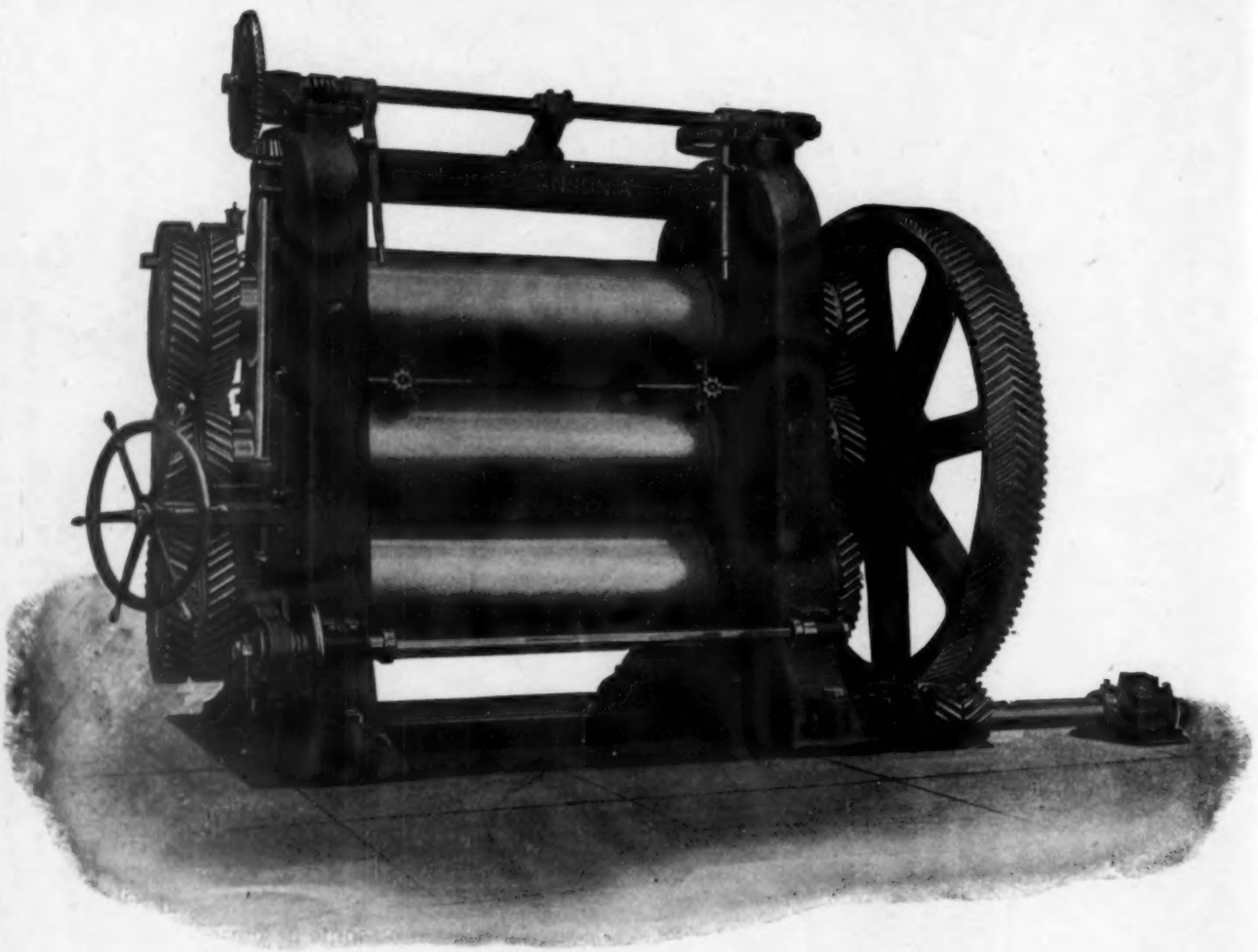
Rubber Machinery



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